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noaa week

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NWS Launches its Annual SKYWARN Program

Photo shows devastation at Sundowner East mobile home court at Salina, Kans., September 25, 1973. See NOAA WEEK, October 12, 1973. (Photo courtesy of Salina Journal.)

A record high of 1107 deadly twisters scourged the U.S. landscape last year, making 1973 the "Year of the Tornado."

Will 1974 be similar? It's too early to say, but it's time to take precautions, which is why the National Weather Service has launched SKYWARN '74, its annual campaign to prevent loss of life from tornadoes. Each year, the NWS launches SKYWARN before the peak of the tornado season to encourage community leaders to prepare for the violent whirlwinds. Among recommendations are to fill out ranks of volunteer storm spotters and to remind people of ways to shield themselves against tornadoes.

Because tornadoes are so erratic and sudden in onset, the best way to deal with them is preparedness—a well-rehearsed plan for quick action when a tornado has been reported bearing down. "There is no question that such plans save lives," says NWS Director Dr. George P. Cressman, pointing to a persistent drop in the average number of tornado fatalities reported annually during the past three decades, compared to the steady rise in U.S. population and the long-range increase in tornadoes reported.

In the 1940's, an average of 179 persons died in tornadoes each year. In the 1950's, when the present tornado forecasting and reporting system was established, the annual average dropped to 141 fatalities, and, in the sixties, as the preparedness program spread, to 94 fatalities. During this same 30-year period, U.S. population grew by more than 50 percent—from 130 million to 200 million. The annual average number of tornadoes reported rose from 155 in

(Continued on page 7)

LSC, NWS Provide Shore Residents With Warnings

The Lake Survey Center's telemetering system, combined with the National Weather Service data and forecasts, enabling instant warning, is proving of keen interest to Great Lakes lakeshore residents, especially in the hard-hit area of shallow Lake St. Clair (near Detroit). Floods and erosion have been menacing these dwellers, as well as threatening beautiful Lake Shore Drive, for several years now, due to the consistently high lake levels.

Though there were no extremely severe storms last fall, results from the three devastating storms during the spring and summer (March 17, April 9 and June 17) are still being felt. The widespread damage from the even earlier storm of November 14, 1972 (though its winds of only 28-30 knots were slight by storm standards), had brought the matter to a head. Its pounding waves leaped over the breakwalls, ravaging many, scoured the land and wreaked considerable havoc on dikes and other barriers.

With the lake levels still running high, shoreline residents could be in for more rough going during the coming months.

See photo on page 6.

ERL Scientists Detect Underwater Waves From Spacecraft Data

Large underwater oscillations called "internal waves"—usually invisible at the surface—have been detected by scientists using images from sensors aboard an unmanned spacecraft.

Dr. John R. Apel and Robert Charnell of the Environmental Research Laboratories' Miami, Fla.-based Atlantic Oceanographic and Meteorological Laboratories, discovered the waves while analyzing images from a multi-spectral scanner aboard the National Aeronautics and Space Administration's first Earth Resources Technology Satellite (ERTS-1).

Scientists speculate that internal wave formation by lunar and solar tides, their subsequent breaking, and dissipation of energy are important processes in the gradual lengthening of the day over millions of years.

"Previously, friction due to tides moving over the rough ocean bottom was felt to be the cause of this slowing down of the earth's spin," says Dr. Apel, who directs the Miami facility's Ocean Remote Sensing Laboratory. "Since the decrease in the earth's rotation rate

(Continued on page 6)

Survey Launched In Conn.

A statewide three-year geodetic survey will get underway in Connecticut this month.

The project is a cooperative effort of the National Geodetic Survey and the state. Estimated annual cost of the program is $380,000, divided equally between the federal agency and the state.

The survey will begin in northeastern Connecticut near Putnam and progress westward until it is completed, probably in 1977.

Preliminary planning for the survey is scheduled to begin February 15. Survey technicians Eugene A. Beauchamp and Verlin D. Novak, assisted by state engineers, will select the sites to be surveyed and compute the height of the towers that will have to be erected to insure a clear line of sight over trees and other objects.

In April, a 20-man field party headed by Harry Romine will set up headquarters at Stones Ranch Military Reservation, East Lyme, and begin the actual surveying.

The cooperative survey will provide on-the-job training in geodetic surveying for state employees, enabling them in the future to establish additional stations as required.

McCaffrey Is NOAA Corps EDS Liaison

Captain Edwin K. McCaffrey,a NOAA Corps Officer since 1952 presently assigned to the Environmental Data Service, was recently designated the EDS Commissioned Corps Liaison Officer to furnish advice and assistance in assuring optimum utilization and treatment of NOAA Corps Officers within EDS. He will also serve as a source of information on NOAA Corps policies, plans, and procedures throughout EDS. Captain McCaffrey was assigned to EDS in the latter part of 1972 following his tour of duty as Commanding Officer of the NOAA Ship *Mt Mitchell.*

Hull-Cleaning Method Developed With Help of Sea Grant Program

(Continued from page 1)

A revolutionary new method of ship cleaning that reduces both time and cost involved in removing marine growth from heavily fouled hulls has been developed by a Seattle, Wash., man, with the help of the University of Washington Sea Grant Program.

Brad Meyers of Controlled Dynamics Corporation made the ship cleaning discovery quite by accident. While involved in the explosive removal of propellers from scrap vessels, he noticed that the shock-producing cord being used had removed marine growth and corroded paint from a section of the hull immediately adjacent to the cord. After considerable experimentation, he succeeded in removing marine growth with an explosive cord mesh draped around the hull. Some of the paint was damaged, however, and in a subsequent cleaning of a merchant vessel, there was not only paint damage but also some minor damage to loose fixtures inside the vessel.

Special instrumentation was developed to determine the levels above which damage would occur to hull plates and below which cleaning would not be effective. The system was revised and a Navy tug was effectively cleaned with no damage.

As a further precau
Mr. Meyers decided
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and now seems to be o
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leaves paint intact. The
stops when it reaches a
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til the hull is cleaned.

It takes only thirty
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process, including af
the net, and the overall
is considerably less
other hull-cleaning met

A NOAA/NBS Energy-Saving Tip

That cosy feeling you get when draperies and blinds are closed on winter nights (and/or cold, cloudy days) is real—not imaginary.

Closing draperies, shades, and blinds reduces the radiative heat loss of people sitting near the cold windows, and increases their comfort without turning up the heat.

Window coverings also save some heating fuel, although the saving is considerably less than that obtained—24 hours a day—by using storm windows or double glazing.

With or without storm windows, you will feel more comfortable indoors on cold nights (and/or cold, cloudy days) if draperies, blinds, and shades are closed.

Area in Georgia Being Surveyed

A 45-mile geodetic survey of land elevations between Kimbrough and Albany, Ga., is underway by the National Geodetic Survey. The six-week project is part of a cooperative program with Georgia to update the national network of elevations in the state. A five-man field party, composed of NGS and Georgia Highway Department personnel and headed by James Corbett, will determine the elevations at over 50 sites along the route.

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Second Meeting Of Coastal Zone Committee Held

The Coastal Zone Management Advisory Committee, which provides recommendations to the Secretary of Commerce on coastal zone policy and issues, held its second meeting February 21 and 22, in Santa Barbara, Calif.

The Committee is made up of fifteen distinguished persons appointed by the Secretary of Commerce, as provided by the Coastal Zone Management Act of 1972. It reports to the Secretary through the Administrator of NOAA, the action agency within the Department of Commerce for coastal zone management activities under the act.

Agenda items for the Santa Barbara meeting included:

—Draft guidelines on the selection of marine and estuarine sanctuaries to be funded by NOAA.

—The national perspective to be considered by States in developing coastal zone management programs.

—Means to assure Federal consistency with State coastal zone management programs.

Astro Party Surveying In Northwest

A three-man National Geodetic Survey astronomical party is conducting a six-week survey at seven sites in Oregon and Washington, including Portland and Seattle. The party, based at Renton, Wash., is one of two highly specialized survey teams operating throughout the U.S.

The party plans to spend about a month in King County observing five sites there, one in the northern part of Seattle, and the remaining time observing two sites in Yamhill and Multnomah counties, the latter in the northern section of Portland.

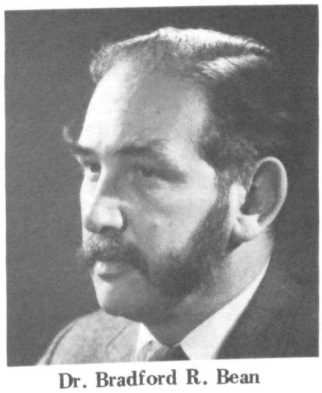
The teams measure the longitude and latitude—the distance from Greenwich, England, and from the poles, respectively—by observing the stars with an instrument called the theodolite.

The information gathered by the teams serves two primary purposes: it helps in determining the actual shape of the earth and assists other NGS field teams in mapping the precise geographic positions of thousands of sites in the U.S.

Six NOAA Men Are Among 21 Elected Fellows Of the American Meteorological Society

Dr. John A. Brown, Jr.

Dr. Richard E. Hallgren



Dr. Bradford R. Bean

Paul H. Kutschenreuter

Dr. Kikuro Miyakoda

Dr. Stanley L. Rosenthal

Five NOAA employees, and a retired NOAA employee, are among the 21 persons announced as new Fellows of the American Meteorological Society at the organization's recent meeting in Honolulu. They are:

—Dr. Bradford R. Bean, Chief of the Boundary Layer Dynamics Group of the Office of the Program Manager for Weather Modification in the Environmental Research Laboratories in Boulder, Colo.;

—Dr. John A. Brown, Jr., Chief of the Development Division at the National Weather Service's National Meteorological Center in Suitland, Md.;

—Dr. Richard E. Hallgren, Deputy Director of the National Weather Service, NWS Headquarters, Silver Spring, Md.;

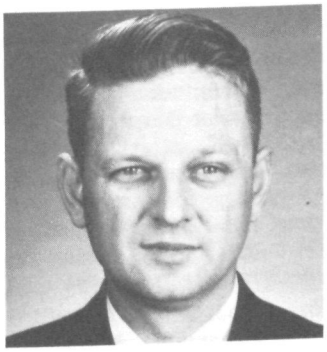
—Paul H. Kutschenreuter, who retired last year as Director of the NWS Pacific Region, after 47 years' Federal Service;

—Dr. Kikuro Miyakoda, Research Meteorologist at ERL's Geophysical Fluid Dynamics Laboratory in Princeton, N.J.; and

—Dr. Stanley L. Rosenthal, Chief of Theoretical Studies at ERL's National Hurricane Research Laboratory in Miami, Fla.

Election to the grade of Fellow of the Society is intended to serve as a recognition of outstanding contributions to the science or application of meteorology, climatology, or other areas of atmospheric science over a substantial period of years.

Cdr. Newsom Heads AMC Engineering Division



Commander Ronald L. Newsom now heads the Marine Engineering Division at the Atlantic Marine Center, Norfolk, Va. He has been a commissioned officer since 1958. He recently graduated from the Armed Forces Staff College in Norfolk, and earlier served aboard four ships as a junior officer, executive officer and commanding officer.

NOAA's Program for the Spanish-Speaking

The President's Sixteen-Point Program is a special emphasis program designed to insure equal opportunity for Spanish-speaking Americans in Federal employment. This Program is an integral part of the Government-wide Equal Employment Opportunity Program.

In order to implement the President's Sixteen-Point Program within NOAA, Eleanor Shannon of the NOAA Personnel Division has been designated as the NOAA Coordinator for the Spanish-speaking. Ms. Shannon may be reached on 301-496-8093. To assist her in implementing the Program in NOAA's field installations, the following people have been designated as Field Coordinators for the Spanish-speaking:

Coordinator	Major Line Component	Telephone
Steve P. Brienza	NWS Eastern Region	(212) 995-8670
Rodrigo V. Gonzales	NWS Southern Region	(817) 334-2668
Irma M. Joern	NWS Central Region	(816) 374-3196
Stephen Holmes	NWS Western Region	(801) 524-5128
James V. Taormina	NMFS Northeast Region	(617) 281-0642
Jorge E. Picon	NMFS Southeast Region	(813) 893-3157
Robert L.R. Knox	U.S. Lake Survey Center, NOS	(313) 226-6157
Gilbert W. Ehrsam	EDS National Climatic Center	(704) 254-0267
Marilyn J. Rivero	Environmental Research Labs	(303) 499-6316
Jack L. Wiley	Northwest Administrative Service Office (NASO) and all areas serviced by NASO	(206) 442-5941

The above coordinators have been designated to assure equal employment opportunity is provided Spanish-speaking and Spanish-surnamed employees and applicants within all NOAA elements. In this capacity, the coordinators' primary role is to:

—provide program leadership and guidance to managers and supervisors on their responsibilities in implementing the President's Sixteen-Point Program;

—serve as resource persons and principal staff advisors on the unique concerns of the Spanish-speaking;

—assure that effective specific guidance and direction organizational units is developed and disseminated;

—insure that the Spanish-speaking EEO effort is tegral part of NOAA's overall personnel management gram;

—create a positive management climate in which Spanish-speaking and Spanish-surnamed work.

The NOAA Personnel Division has provided the field ordinators with guidelines on the typical activities coordinators must become involved in, so that they fulfill their role. These activities include the Presi sixteen points which are identified under the appro Affirmative Action Plan area and encompass efforts to equal employment opportunity for Spanish-speaking ployees and applicants in the areas of recruitment, utiliz of skills, upward mobility, management and supervisory derstanding and support of the program, community ticipation, program evaluation, career and EEO counseli

At the NOAA Headquarters level, a concentrated cruitment effort has been made to provide counseli NOAA careers to Spanish-speaking students during vis the following colleges which have a high concentratio Spanish-speaking students:

College	Date Visited
San Antonio College San Antonio, Texas	November 28,
Texas Southmost College Brownsville, Texas	November 29,
Pan American University Edinburg, Texas	November 30,
New Mexico State University Los Cruces, New Mexico	December 4,
University of New Mexico Albuquerque, New Mexico	December 6,
University of Texas El Paso, Texas	December 12,

Through these efforts NOAA hopes to make President's Sixteen-Point Program a reality within organization.

Annual Employee Performance Ratings Due

March 31, 1974, marks the end of another performance rating period. The following paragraphs should serve to remind supervisors and employees of their responsibilities in this area.

The annual performance rating is a supervisor's evaluation of an employee's overall performance during the preceding rating period which begins April 1 of each year and ends March 31 of the following year. The rating is expressed as outstanding, satisfactory, or unsatisfactory.

Performance ratings must cover a minimum period of ninety days. For this reason, employees who have more than three months service on March 31, but who, after January 1, have been promoted or reassigned, have had a change in supervision, or have received a warning of unsatisfactory performance, will not be rated until ninety days thereafter. Employees who initially entered on duty after January 1, will not be rated for the current performance rating year.

Supervisors and employees share responsibility in making sure that performance ratings are meaningful. Employees should ask their supervisors to clarify any phase of a work they do not understand, and supervisors are exp to establish an open door policy, whereby any emp may feel free to request job clarification. Employees, wise, are expected to accept any constructive evaluat and suggestions for improvement of their work.

Supervisors, in addition to counseling with employe improve their work, serve as rating officials. They dete the level of performance required for each kind of under their supervision and continually appraise empl performance against the requirement.

Outstanding ratings are awarded when an employee formance clearly exceeds all aspects of performance ards relating to the position and when the employee d special commendation as well. Supervisors periodically sider recommending an incentive award for an employee has been assigned an outstanding rating.

Employees whose performance meets or exceeds aspects of the position are rated satisfactory. An emp

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hange in Payroll Withholdings for Health Benefits

The Government's contribution to Federal employees' alth insurance premiums has been increased from 40 to 50 rcent by Public Law 93-246, which was signed by the esident on January 31. The increase is retroactive to the st day of the first pay period beginning on or after nuary 1, 1974.

In 1975, the Government's contribution, which is based the cost of the average high-option premium for the six gest health insurance plans, will be increased to 60 rcent.

This change in withholdings will be reflected in pay ecks received on February 27, 1974, for the pay period AN which began February 3 and ended February 16, 1974. Because of the retroactive nature of this change, basic adjustments are being processed in Payroll and will be reflected in pay checks in the near future.

The new law also raises the ceiling for the Government's contribution to any health plan to 75 percent of the premium. Previously, the Government's contribution could not exceed half the premium cost for any plan or option.

Biweekly premium rates for the two Government-wide plans, with contributions by Government and by employees, will be as follows under the new law:

	TOTAL PREMIUM	GOVERNMENT PAYS	EMPLOYEE PAYS
emnity Benefit Plan (Aetna)			
GH SELF	$10.52	$ 5.49	$ 5.03
GH FAMILY	26.17	13.67	12.50
W SELF	5.96	4.47	1.49
W FAMILY	14.76	11.07	3.69
vice Benefit Plan (Blue Cross/Blue Shield)			
GH SELF	$11.88	$ 5.49	$ 6.39
GH FAMILY	28.97	13.67	15.30
W SELF	4.08	3.06	1.02
W FAMILY	9.99	7.49	2.50

Rate changes for employee organization plans and comprehensive plans will be available in the near future from your servicing personnel office.

Another provision of the new law, which will become effective no later than July 30, 1974, will permit annuitants who participate in, or who are eligible to participate in, the Retired Federal Employees Insurance Program to change to the Federal Employees Health Insurance Program. Affected annuitants are those who retired before July 1, 1960. The Civil Service Commission said information explaining how retirees and survivor annuitants may enroll in the Federal Health Insurance Program will be issued as quickly as possible.

A further provision of the recently signed law binds those companies carrying Federal health insurance to comply with Civil Service Commission rulings in case of disputed claims. A carrier is required to pay for, or provide a service or supply for, which the Commission finds an employee to be entitled under his or her contract with the carrier.

erformance Ratings Due

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d as satisfactory generally has some aspects of work rformance which could be improved, balanced with outnding work performance in other work areas. Satisfactory ings do not require a written justification.

Unsatisfactory ratings are used when an employee's perrmance is weak in essential aspects of the job requirements d is not offset by strong performance in other areas. nployees may be given an unsatisfactory rating only after a itten warning has been issued, not less than ninety days r more than six months prior to the date the rating period ds. Warning letters must inform employees where their job rformance has not met performance standards, how they y bring their work up to a satisfactory level and what forts the supervisor will make to help raise the level of job rformance. If an employee's performance remains at a low el after the ninety day period, an unsatisfactory rating is epared.

Employees receiving unsatisfactory ratings must be reved from the positions they currently occupy. They may reassigned or demoted to positions they can perform at a isfactory level or, if necessary, employees receiving unisfactory ratings may be separated from the Federal Serv-

Employees may appeal both satisfactory and unsatisfacry ratings within thirty days after the receipt of the rating. peals of unsatisfactory ratings may be made within NOAA to the Civil Service Commission. However, an appeal y not be made to NOAA after it has been made to the il Service Commission. Appeals of satisfactory ratings may made to either NOAA or CSC but in no case to both. original choice is final.

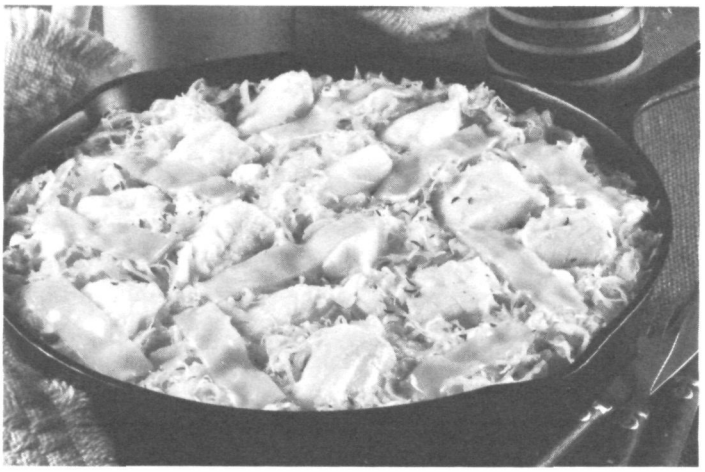
Supervisors and employees who have any questions reding performance ratings should consult Chapter 18, "Perrmance Ratings," of the NOAA Personnel Handbook or ntact their servicing personnel office.

Department of Commerce Sponsors Energy Conservation Poster Contest

In support of the President's Energy Conservation Program, the Department of Commerce is sponsoring a poster contest. Posters should depict "how to conserve energy," or "ways and means for employees to contribute to energy conservation," and will be used in the Employee Suggestion Program and other promotional activities.

Poster ideas should be submitted to Mrs. J. DeLauder, Room 5008, Commerce Building, by April 19, 1974. Honorary recognition will be given for outstanding quality of poster ideas.

recipe of the week



CHEESY FISH AND SAUERKRAUT SKILLET

1 pound fish fillets, fresh or frozen
½ cup chopped onion
2 tablespoons margarine or cooking oil
1 can (1 pound 11 ounce) sauerkraut, well drained
½ cup water
½ teaspoon caraway seed
½ teaspoon garlic salt
1 package (3 ounce) cream cheese, cubed
2 slices process American cheese, cut in strips

Thaw frozen fish; cut into 1-inch pieces. Cook onion in margarine or oil in 10-inch frypan until tender, but not brown. Add sauerkraut, water, caraway seed, and garlic salt. Cover and simmer about 30 minutes or until flavors are well blended. Stir cream cheese into sauerkraut. Top with fish pieces. Cover and simmer about 10 minutes or until fish flakes easily when tested with a fork. Top fish with strips of cheese; allow to melt. Makes 4 servings.

Next Week's Best Fish Buys

According to the NMFS National Consumer Educational Services Office in Chicago, the best buys for the next week or so are likely to be bluefish and weakfish along the Northeast Seaboard; speckled trout and grouper in the Southeast and along the Gulf Coast; whiting and sheepshead in the Midwest; halibut chunks and Greenland turbot in the Northwest; and mahi-mahi in the Southwest.

Underwater Waves Detecte

(Continued from page 1)

requires the constant dissipation of about three million megawatts of power, recent oceanic measurements have cast doubt on the effectiveness of the ocean bottom to accomplish this. Instead, internal wave activity has become the candidate."

Internal waves are also of interest to scientists because they affect the propagation of sound in the ocean and contribute to the mixing processes in its upper layers.

The waves are very slow, very long, progressive oscillations of stratified layers of water that exist under the surface of oceans and lakes. One complete oscillation typically takes 10 to 30 minutes, has a wave speed of about two-thirds of a mile per hour; wave activity typically is most pronounced at 60 to 600 feet below the surface.

"Internal waves are probably most familiar to the nonoceanographer through devices sold in novelty stores in which a clear plastic box filled with two liquids of different colors and densities is rocked slowly back and forth," explains Dr. Apel.

"The large waves on the border between the liquids travel majestically along the box and crash into th to form breakers. The kinds of waves can b erated in the ocean w changes in water temp or salinity lead to cha density of sufficient tude."

While the up-and motion of the unde layers may amount t dreds of feet, very vertical movement oc the surface. Instead, horizontal motions th fect the very wind-caused surface wa changing the way sun reflected and scattered the parts of the surface lying the internal wave

This periodic chang flected sunlight, travels with and abo underwater wave, app be what the oceanog have detected on the images.

The internal waves first spotted by Dr. Ap Mr. Charnell on images made over t lantic Ocean off New in the vicinity of the Canyon—the an drowned riverbed o continental shelf th which the Hudson flowed during the last period, when sea lev lower.

Lake Shore Drive (Northeast Detroit, along Lake St. Clair), results of scouring behind breakwall, threatening its collapse. times washed up over the drive causing damage which is being repaired.

WS Launches its Annual SKYWARN Program

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forties, to 479 in the ties, to 681 in the sixties. rt of the latter rise is due a better system of re- rting, of course, but part o is surely due to in- eased exposure of people tornadoes—in places here before there was no e to see them.

The trend is continuing in- the seventies. In 1970 ere were 652 tornadoes d 72 tornado deaths; in 71, 889 tornadoes and 6 deaths; in 1972, 741 nadoes and 27 deaths; d in 1973, 1107 tornadoes d 87 deaths. If the trend the seventies continues, e average for the decade ll be somewhere around 000 tornadoes a year ac- mpanied by fewer than 90 rnado fatalities.

A lot depends on whether e nation as a whole keeps guard up. A quick look at at happened last year should supply all the incentive needed. Wrote Allen Pearson, Director of the National Severe Storms Forecast Center, and his Deputy Fred Ostby, in a year-end review:

"The 1973 tornado season can only be described by the liberal use of superlatives. It had the most, lasted the longest, involved more states and produced more super tornadoes than any year since tornado records began.

"In addition to the record of 1107 tornadoes for the nation as a whole, there were 11 states which also had record numbers—Arkansas, Illinois, Indiana, Michigan, Mississippi, Missouri, Kentucky, New Jersey, North Carolina, Ohio, and Tennessee. Only four states reported no tornadoes at all—Alaska, Rhode Island, Utah, and Washington.

"The increase in North Carolina was particularly dramatic. In the past 58 years North Carolina had never reported more than 7 tornadoes in any one month. In May it had 32. And then there was Indiana: it had 30 tornadoes in the month of June, alone, and 48 for the year, compared to a long-term average of 22.

"While admittedly the reporting networks are superior to those of years past, the total of 94 tornadoes reported from May 26 to 28 equaled the number of tornadoes reported during the entire year of 1931.

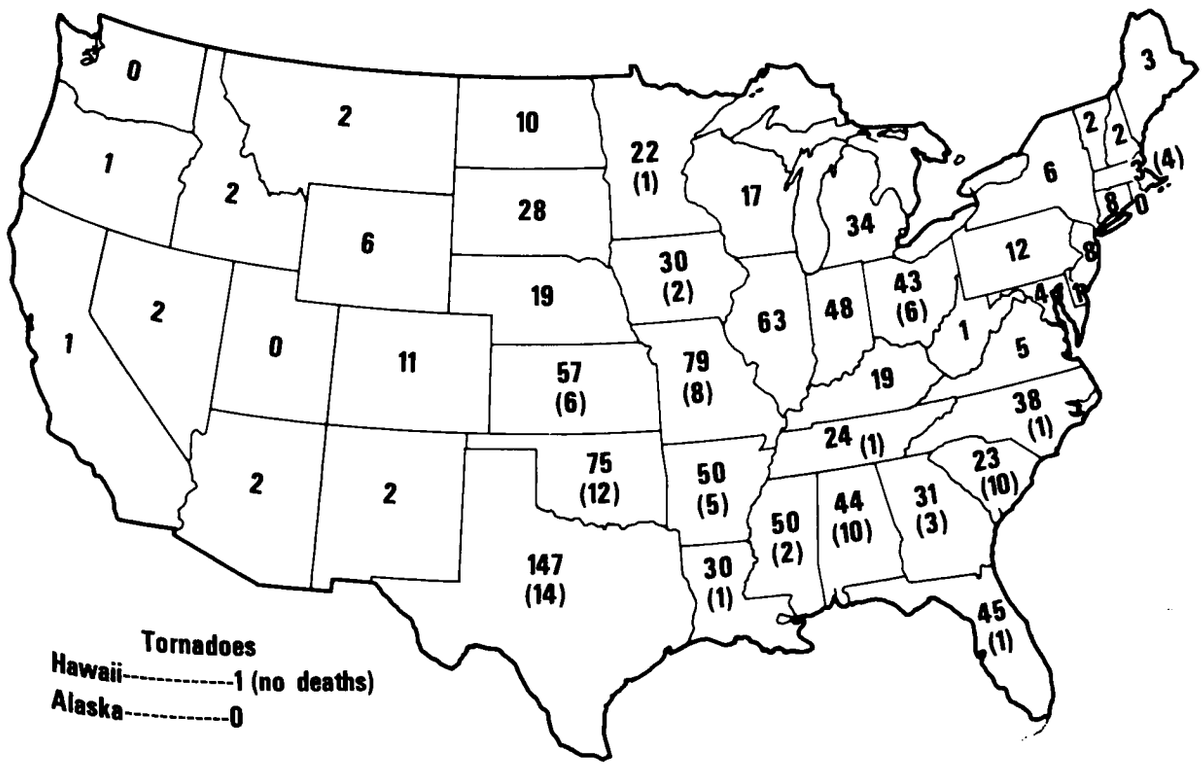
"It was also a year with scores of long-lived tornadoes, the most notable being the twister that left a track 158 miles long from north-central Kansas into Nebraska on September 25, and the 135-mile-long track in central Alabama May 27. These two storms were among the most violent on record.

"Total property damage from tornadoes during 1973 amounted to more than half a billion dollars.

"Whether or not a trend of more and bigger tornadoes is developing no one can say, but last year's widespread outbreaks underscore the fact that almost no one in the U.S. should feel 'It can't happen here.'"

NWS officials point out that despite radar, satellites, and other sophisticated instruments, forecasters must depend on a vast number of volunteer observers to make the SKYWARN alerting system work. The human eye is still the only reliable means of detecting tornadoes.

Most sightings of the ominous, funnel-shaped clouds are made by volunteer spotters, who pass the word to official warning centers. This vital work is performed by thousands of public-spirited citizens organized into spotter networks. One aspect of SKYWARN is to recruit and train more spotters where needed.



urrence of the 1107* tornadoes and 87 tornado deaths (figures in enthesis) in the U.S. in 1973. Previous high for tornadoes was , set in 1967; high for tornado deaths, 794, was set in 1925. ures for 1973 are preliminary, and may change slightly when the final tally is made.

*State-by-state totals add to 1111 tornadoes, because four tornadoes crossed state borders.

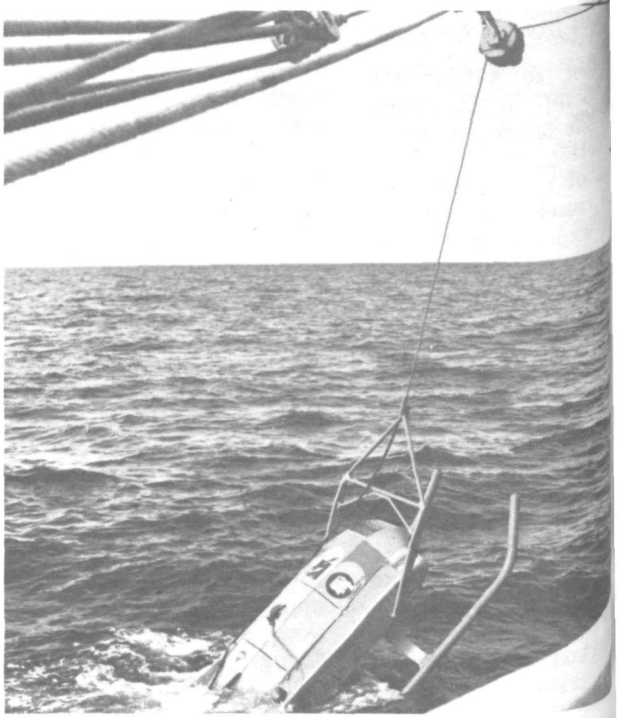
Electronic Robot Developed for Underwater Resource Use

A second generation robot diver that can inspect the seafloor at great depths is expected to aid significantly in locating commercially important stocks of fish and other undersea resources.

Named RUFAS II (for Remote Underwater Fisheries Assessment System), the instrument is towed behind a research ship, and dives on command to look at selected underwater features. Development of RUFAS II was under the sponsorship of the National Marine Fisheries Service and the Office of Sea Grant through a grant to Mississippi State University, and as a result of collaborative work by Dr. Sidney Upham, Mississippi-Alabama Sea Grant Director, and Dr. Edward F. Klima, former base director of the NMFS Pascagoula laboratory. Principal investigators on the project were Richard D. Benton, Associate Professor of Engineering Technology at Mississippi State University, and Wilbur R. Seidel, Manager of the NMFS Harvesting and Technology Program based at Pascagoula.

RUFAS II is equipped with roving "eyes" that photograph the surrounding scene by videotape and 35 mm. film, and continuously televise its observations to the mother ship. Sonar beams send warning signals to the shipboard operators when underwater navigational hazards are detected so the instrument's "flight pattern" can be altered electronically.

In initial sea trials the 12 by 7-foot, 1,000 pound sled skimmed and hovered over several miles of ocean bottom, looking up, down, and sideways to give scientists aboard the mother ship a fish-eye view of marine features from a few feet above the bottom to just beneath the surface. RUFAS II can climb at a rate of 2.5 feet per second. It was towed at speeds up to six knots by a cable more than a mile long, to permit dives as deep as 2,400 feet.



RUFAS II is lowered into the water from a research ship

One important feature that distinguishes RUFAS II from its predecessor, RUFAS, is an automatic flight control system, installed to obviate the for continuous manual trol of the vehicle, times for as much hours without interr

Effective Supervision Class Is Held in Miami, Fla.

Participants in the Effective Supervision class held recently in Miami, Fla., included (standing, from left) Bonnie True, Environmental Research Laboratories; Ansel Bryan, National Weather Service; Cdr. Donald Florwick, National Ocean Survey; Ed Higdon, NWS; Sylvia Worthem, ERL; Johnny Butler, National Marine Fisheries Service; Joseph Pelissier, NWS; James Trout, ERL; Walter Koss, ERL; Robert Sax, ERL; Alvin Samet, NWS; and Robert Harris, Headquarters; (seated, from left) Ed Manak, NWS; Charles NWS; Frank Cicerelli, ERL; Marian Jewell, NOAA Thomas Vanselous, NMFS; and Donald Gaby, National Satellite Service.

National Oceanic and Atmospheric Administration

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