



NOAA WEEK

U.S. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration

Project Stormfury Operations Begin August 4; New Hurricane Seeding Theory To Be Tested

Project Stormfury hurricane research and modification plans for 1971 have been announced by Dr. Robert M. White, NOAA Administrator, and Rear Admiral William J. Kotsch, USN, Commander of the Naval Weather Service Command. The project will be on the alert from August 4 - October 31, awaiting the opportunity to seed hurricanes and perhaps diminish their force. Seeding experiments will be conducted on storms in the southwestern north Atlantic, the Caribbean, and the Gulf of Mexico, when the probability is small--10 percent or less--that the hurricane center will come within 50 miles of a populated area within 18 hours after seeding. This will allow ample time to measure seeding effects before they are obscured by proximity to land. In 1970, there were no hurricanes that met these criteria.

The project's major goal for 1971 is to confirm the promising results of the experiments conducted in 1969 on Hurricane Debbie. This year, the principal Stormfury seeding experiment will be testing a new hypothesis for the seeding. Recent computer simulations of the hurricane experiment--using mathematical models developed by the National Hurricane Research Laboratory and the analyzed data collected in Hurricane Debbie--have indicated that best results should be realized by seeding essentially the same annular band as in Debbie, but by concentrating on the clouds beyond the ring of maximum winds which can be made to grow taller and larger by seeding. The computer experiments and the data collected in Debbie and in unmodified storms of recent years have led to a revised Stormfury hypothesis as to how hurricane seeding reduced a storm's intensity. In the new theory, freezing of supercooled water is only the beginning, the trigger

that sets off a chain reaction. In accordance with the computer simulations and the new theory, seeding runs this year will begin about two miles further out from the inner edge of the storm's eyewall than in previous experiments. Seeding will be repeated five times, at two-hour intervals, with 208 silver iodide generators being dropped on each run.

Other experiments planned for 1971 include seeding of hurricane rainsectors and rainbands, and continuation of experiments on lines of tropical cumulus clouds not associated with hurricanes.

Dr. R. Cecil Gentry, Director of the National Hurricane Research Laboratory, Miami, is Director of Project Stormfury. Captain L. J. Underwood, U.S. Navy, Commanding Officer of the Fleet Weather Facility at Jacksonville, Fla., is Assistant Director of the Project and Navy Project Coordinator. Dr. Pierre St. Amand is the Project Manager at the Naval Weapons Center at China Lake, Calif., where the silver iodide pyrotechnic devices used by Project Stormfury for seeding were designed and developed. Aircraft and flight crews for the 1971 experiments are being provided by the Research Flight Facility, Miami; Navy Hurricane Hunter Squadron VW-4, Naval Air Station, Jacksonville, Fla.; and Navy Attack Squadron 85, Naval Air Station, Oceana, Va.

This year, the Air Force Air Weather Service, commanded by Brigadier General William H. Best, Jr., U.S. Air Force, is making available to Project Stormfury aircraft and crews from three Weather Reconnaissance Squadrons. They are the 53rd WRS, Ramey Air Force Base, Puerto Rico; the 58th WRS, Kirtland Air Force Base, New Mexico; and the 55th WRS, McClellan Air Force Base, Calif.

Weather for Distant Cities To Be Provided in D.C. Area

The National Weather Service plans to put into operation two new automatic telephone-answering systems in the Washington metropolitan area, August 1. The new systems are designed to aid people making travel plans and will carry recorded messages giving brief weather forecasts for distant cities. One line will give forecasts for 10 Eastern cities; the other for 10 Western cities. During the experimental phase, each line will handle only one call at a time. Special counters will be used to make spot checks on the number of attempts to dial the new numbers, so that Weather Service officials will get an idea of the popularity of the service and be able to gage the number of lines needed on a long-term basis.

The experimental program in Washington is aimed at meeting a demand long recognized by forecasters. Says Weather Service Director Dr. George P. Cressman:

"We know that weather forecasts for distant cities are a major unfilled need. Travelers want to know what to expect at destinations that frequently are hundreds of miles away. This information is in our system, but the problem is how to get it to the person who needs it. Individual telephone queries to a forecaster are out of the question in any city large enough to have a nearby Weather Service office. If all the people wanting distant-city forecasts called, hardly anyone would get through. As a consequence, most people start trips hoping for the best. We intend to experiment with a number of ways of providing the information desired by travelers."

On the Eastern-cities line--736-7171--abbreviated two-day weather forecasts will be given for Boston, New York, Miami, Pittsburgh, Atlanta, Detroit, Chicago, Memphis, New Orleans and Minneapolis. On the Western-cities line--736-8181--callers can expect forecasts for Kansas City, Tulsa, Dallas, San Antonio, Denver, Salt Lake City, Phoenix, Seattle, San Francisco and Los Angeles. These forecasts will be only for the cities themselves, not for road or weather conditions en route. Because the service will be of limited scope during the early, experimental phase, Weather Service officials point out that demand is quite likely to exceed capacity. Callers getting a persistent busy signal are asked to be patient.

\$1 Million Miami Facility Now Ready for Occupancy

NOAA is moving this month into its \$1,000,000 Ship and Engineering Facility at the Miami (Fla.) Oceanographic Center on Dodge Island. Four one-story buildings, leased from Dade County, will accommodate the Miami facility of NOAA's National Ocean Survey. The structures include one office building, one laboratory building, and two warehouses. Two of NOAA's oceanographic "floating laboratories" will be berthed at the facility at the New Port of Miami in addition to five or six launches. They are the DISCOVERER and the RESEARCHER, which is being moved from NOAA's Atlantic Marine Center in Norfolk, Va. One or two vessels of the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences will also be berthed there. Housed at the facility will also be the Ocean Engineering Branch of the NOS's Engineering Development Laboratory in Rockville, Md. The branch laboratory will begin moving this month from its present site in Miami. The new facility will be dedicated in early September.

Siegel Receives NWS Public Service Award



Seymour N. Siegel, President of the Broadcasting Foundation of America, received the National Weather Service's Public Service Award on July 14 "in recognition of his contributions since 1934, both as a staff member and as the Director of Station WNYC in New York City in advancing the quality of weather broadcasts and in promoting the use of radio as a means of disseminating weather forecasts, warnings, and related weather information to the public." (Left to right) Gerald L. Shak, Eastern Region User Services Representative, NWS; Seymour N. Siegel, and John A. Mayer, MIC, Weather Service Office, New York.

Irvin, Atwell, Bivins, and Bangert Appointments Announced



Wesley Irvin



Lt. John T. Atwell



Luther E. Bivins



Albert O. Bangert

Wesley Irvin has been appointed NWS Manpower Management Officer, a new position on the Manpower Utilization Staff, Office of the Director. In his new job, he will develop and manage a program of field station visits concerned primarily with station manpower management and utilization practices. Mr. Irvin has worked for more than 15 years in the Headquarters Data Acquisition Division. His most recent assignment was Chief, Surface Systems Branch in DATAC.

Lt. John T. Atwell has been assigned to Fort Pierce, Fla., for two years of duty with the Smithsonian Institution's submersible program. Lt. Atwell, an oceanographer, will assist in the construction of a submersible tender and receive training in the operation of submersibles. He will study the design and capabilities of deep submersible vehicles and how they may be applied to NOAA missions. Atwell is the second NOAA officer assigned to submersible duty. Lt. Bruce L. Keck, of Medina, Ohio, is now on assignment with the Navy's Submarine Development Group One in San Diego, Calif.

Luther E. Bivins has been selected as Chief of the Evaluation Branch of the National Oceanographic Instrumentation

Center's Testing Division. This branch operates a laboratory for test and evaluation of oceanographic instruments and publishes their results for the oceanographic scientific community.

Mr. Bivins joins NOIC after nine years with the Naval Oceanographic Office (NAVOCEANO) in ocean instrument development.

In his last position, he served as a supervisory project engineer responsible for improving NAVOCEANO's ocean current measuring techniques and for several buoy development projects.

He attended the North Carolina State University and the University of Miami.

Albert O. Bangert, former principal assistant at the Omaha, Nebraska, Weather Service Office, has succeeded Edward F. Stapowich as meteorologist in charge of the station. Prior to assignment to Omaha, Mr. Bangert served the National Weather Service at Kansas City, Columbus and Springfield, Mo.; North Platte, Nebr.; Canton Island in the Pacific; Duluth, Minn.; and San Juan, P.R. Mr. Bangert received a bachelor's degree from Southwest Missouri Teachers College, and has completed additional academic study at Pennsylvania State University and the University of Michigan.

Eight NWS Pacific Stations Win Citations

Eight NWS Pacific Region stations are winners of one of more Citations for Excellence in observations during the first quarter of 1971. Winners in the upper-air observations category are Johnston, Majuro, Pago Pago, and Yap Islands. Surface observations category winners are Hilo, Honolulu, Johnston, Kahului, Lihue, and Yap Islands. Yap and Johnston also received significant achievement awards.

RUDE and HECK Find Wrecks in Delaware Bay

During wire drag operations in Delaware Bay, the NOAA Ships RUDE and HECK located two wrecks. One is a sailing vessel built of wood planking on steel frames and backbone with an anchor that measured more than 10 feet along its shank. The ship is covered with 59 feet of water. The other is the VENTURE, which sank in 17 feet of water last September.

NOAA Sea Grant Awarded For Continental Shelf Study

A \$199,500 NOAA Sea Grant has been awarded to the University of New Hampshire. The grant will help to fund the University's attempts to develop a method of remotely measuring sea floor parameters and study ways to best utilize the United States' Continental Shelf. The project, being conducted jointly by the University of New Hampshire and the Raytheon Company's Submarine Signal Division, is under the direction of Robert W. Corell and Asim Yildiz. A major portion of the project started last year, has been to develop the use of sophisticated underwater acoustics technology, which, when combined with certain physical measurements, may enable scientists to measure key physical parameters of the sea floor. According to University of New Hampshire investigators, in the years ahead the coastal zone, contiguous to the Nation's most heavily populated states, will become an increasingly important resource. This region has the potential for yielding living and mineral resources, for supporting various kinds of physical structures, and for an improved understanding of the environmental interrelationships within the zone. In a related Sea Grant study, the University of New Hampshire and the Raytheon Company are looking into the effect that sand and gravel removal in Continental Shelf mineral mining operations will have upon the local plant and animal life.

Great Lakes Water Levels Is Subject Of New Lake Survey Center Publication

A new publication--Great Lakes Water Levels, 1860-1970--is available from the Lake Survey Center for \$2.50. The book was compiled to meet the requests for information from lake shippers, engineers, shoreline property owners, scientists, builders, and hydroelectric companies. The attractive soft-bound book contains map and geographical index showing the more than 50 permanent gages in the Lake Survey's network, as well as tabular records of monthly and annual average water surface elevations of each gage for the period of existence. It also contains tables showing numerous summaries of average and extreme levels. Master gage records included in the publication--usually the oldest in the network--are the ones used as a basis for the hydrograph of lake levels, available free on request from the Lake Survey Center, Detroit, Michigan.

National Hail Research Experiment Underway in Colorado this Summer

NOAA scientists are key participants in the National Hail Research Experiment underway this summer to perform seeding tests on potential hailstorms in northeastern Colorado. Centered roughly over the eastern section of the Pawnee National Grassland, this area is bounded approximately by Kimball, Nebr., on the north and by Grover, Fort Morgan, and Sterling, Colo., on the west, south, and east. The hail researchers planned to seed only a few storms this summer to test seeding techniques and operational procedures. In addition to setting up and testing research systems, the scientists have made observations of unseeded hailstorms with radar, research aircraft, automatic sampling devices, and other research tools. They were prepared to seed up to 16 storms, but as of July 19, no suitable storm had passed through the research area. This summer's field operations end tomorrow. The experiment, supported by the National Science Foundation and managed by the National Center for Atmospheric Research in Boulder, Colo., is a cooperative effort involving a number of universities, federal agencies, and other organizations.

Palmer Gives Drought Map Briefing at OEP



Wayne Palmer (left), EDS Project Scientist for Bioclimatology, conducted a briefing on drought at the Office of Emergency Preparedness, July 23. The briefing was held to provide OEP's staff with necessary technical background knowledge of the climatic and meteorological factors incorporated into the EDS drought severity maps which OEP transmits to the President each week. A further objective was to acquaint the EDS representatives with specific problems facing OEP in the preparation of their weekly drought report to the President. Mr. Palmer was assisted by Arnold Hull, EDS' Acting Associate Director for Climatology, and Dr. Gerald Barger, Director of EDS' Laboratory for Environmental Data Research.

Three Commerce Bronze Medals Presented at ADTECH Ceremony



Pictured, front row, left to right: Edwin F. McCann, Chief, AOD; Mary Duvall, Wilma Navazio, Alma West, and Eleanor Grimes, ESIC; Clyde Hughes, Chief, Employment Branch; and Robert Carnahan, Deputy Asst. ADTECH. Back row, left to right: Theodore Gleiter, Asst. Adm. for ADTECH, who made the presentations; George Murphy and Clarence Beale, Computer; Bruce Benton, Chief, Earth and Marine Services, Budget; Charles Anderson, Stephen Ballard, and Herman Beck, Budget. Receiving awards but not present were: Dr. Jack Shuman, ESIC; Robert Danson and Daniel Jetter, Computer.

Three Washington-area NOAA employees were recently honored with Department of Commerce Bronze Medals in an ADTECH ceremony in which 16 other employees received cash awards or quality increases for high quality performance.

Mrs. Alma B. West, Supervisory Librarian presently assigned to EDS' Environmental Science Information Center at EDS headquarters, has won the Department of Commerce Bronze Medal "for extremely competent and dedicated service as a Librarian over a period of many years with NOAA, ESSA, and the Weather Bureau." Mrs. West has held the position of Chief, Acquisitions Unit, Technical Processes Section since October 1969. Her earlier positions were: 1963 to 1969, Supervisory Librarian, Acquisitions Unit, Atmospheric Sciences Library and its predecessor, the Weather Bureau Library; from 1956-1963, a reference librarian and from 1948-1956, a Cataloger, both positions in the Weather Bureau Library.

Clyde L. Hughes, Chief of NOAA's Employment Branch, has received the Department of Commerce Bronze Medal "for outstanding professional competence in Personnel Administration, particularly in the area of special interest programs." Mr. Hughes joined the Weather Bureau in 1937 as a junior observer at Key West, Fla. After three years of military service during World War II, he returned to

the Weather Bureau as a meteorologist serving at Chattanooga, Tenn., and Birmingham, Ala. In 1951, he changed from technical to administrative duties in the Weather Bureau's Division of Personnel Management, Washington, D.C. Mr. Hughes became Chief of the Weather Bureau's Placement Section in 1960. When ESSA was formed in 1965, he was appointed to head the Employment Branch, and has continued in that assignment throughout the organization of NOAA in 1970.

Bruce M. Benton, Supervisory Budget Analyst in NOAA's Budget Division, Rockville, Md., has received the Department of Commerce Bronze Medal "for valuable and outstanding contributions in the area of financial management for more than 20 years." Mr. Benton joined the Weather Bureau at Columbus, Ohio, in 1937 as a junior observer, later serving at Hartford, Conn. In 1940, he transferred from the field office to Weather Bureau headquarters, Washington, D.C. Mr. Benton joined the Weather Bureau's Budget Office as a Budget Analyst in 1948, becoming Chief, Financial Control Section in 1958. With the formation of ESSA in 1965, he became Chief, Research and Development Appropriation Section in ESSA's Budget and Finance Division. Mr. Benton is presently Chief, Earth and Marine Services Branch in NOAA's Budget Division.

Randolph Cross Wins Award For NASO Bond Drive Efforts



Randolph S. Cross (right), accounting technician assigned to the Northwest Administrative Service Office, under the Veterans Readjustment Appointment Program, is given a certificate of appreciation by J. M. Patton, Director of the Service Office at Seattle. Mr. Cross served as Coordinator for the 1971 Savings Bonds Campaign in which the Service Office attained a record of 95 percent employee participation. Mr. Cross's first association with the Federal Government was as a summer trainee under the Youth Opportunity Program in the old Bureau of Commercial Fisheries in 1965.

Townsend Is Elected Lt. Governor Of Kiwanis Alaska-Yukon Division



Jack Townsend (left), Chief of the College (Alaska) Observatory, has been elected to the office of lieutenant governor of the Alaska-Yukon Division of Kiwanis International. Mr. Townsend will take office on October 1, 1971. The Alaska Division is one of the largest divisions in Kiwanis International and

is part of the Pacific Northwest District that includes Washington, Oregon, British Columbia, Yukon Territory, Alaska, the northern part of California, and the western part of Idaho.

Survey of Massachusetts Coast To Be Completed by PEIRCE

The most detailed hydrographic survey ever made along the Massachusetts coast from Cape Ann to Cape Cod will be completed this year by the National Ocean Survey. The final phase, which is expected to take about three months, is being made in the waters off Cape Cod. It will provide navigational information for the area's seagoing commerce and recreational boating. The information gathered by the Survey has resulted in the revision of more than twenty existing NOS nautical charts. One new small-craft chart from Portsmouth, N.H., to Boston was issued and another is planned from Boston to Cape Cod Canal. The project this year will be carried out by the NOAA Ship PEIRCE. The 162-foot, 760-ton vessel is based at Beverly and is under the command of Cdr. Bruce I. Williams of Bremerton, Wash. The PEIRCE will conduct the survey in the coastal waters of Cape Cod between Provincetown and Chatham. The 160 square miles of coastal waters will be surveyed by ship-based launches from the shore to about four miles seaward. The five-year survey started off Ipswich and has been conducted each summer or early fall since 1967. It embraced all harbors along the coast including Rockport, Gloucester, Manchester, Beverly and Salem with the exception of Boston Harbor and Cape Cod Bay which had already been surveyed in detail.

Oregon Officials Given Centennial Posters



Harvey Moore (right), of the National Marine Fisheries Service, presents posters commemorating "A Century of Fish Conservation" by the U.S. Government to Robert Schoning (left), Director, Fish Commission of Oregon and John McKean (center), Director, Oregon State Game Commission.

Disbrow Interviews Students On Gallaudet's Career Day



James A. Disbrow (left), Equal Employment Opportunity Officer with ERL's Center for Experimental Design and Data Analysis (formerly the Barbados Oceanographic and Meteorological Analysis Project), discusses employment opportunities with an interested student at Gallaudet College's recent "Career Day." The program, cosponsored by the Young Professionals of the Society of Personnel Administration and the Gallaudet College Counseling and Placement Center, acquainted area personnel representatives from private industry and the Federal Government with the potentialities for professional employment of the deaf. An interpreter is second from left.

NOS Team Surveys Florida Coastal Areas To Gather Hurricane Flooding Information

A two-man NOS team, headed by Robert R. Wagner, is conducting a survey of coastal areas in the counties of Escambia, Santa Rosa, Okaloosa and Walton in Florida on flooding from hurricanes and severe ocean storms. The survey is being made at the request of the Federal Insurance Administration of the Department of Housing and Urban Development. In conducting the survey, the National Ocean Survey team is relying on flood heights and limits of severe storms of the past. The party is seeking information on severe storms which occurred in 1926, 1950, 1953 and 1956. The National Weather Service is also furnishing the Federal Insurance Administration with analysis of flooding over a larger region of the coast.

NMFS Predicts Good Catches For California Albacore Tuna

Commercial fishermen may be headed for better than average catches of albacore tuna in California waters south of the San Francisco area this year. Estimates for 1971 indicate that 25 to 35 million pounds of albacore may be expected in the catch south of San Francisco and 15 to 22 million pounds in waters north of the city. The prediction is based on data contained in the 11th annual albacore forecast recently issued by the National Marine Fisheries Service's Fishery-Oceanography Center at La Jolla, Calif. Chief of the forecasting group, Dr. R. Michael Laurs, foresees good fishing from July to late fall, and adds that the albacore should be especially abundant in offshore waters during the early part of the season. The NMFS Fishery-Oceanography Center will issue albacore advisories regularly as the season progresses.

Halverson Reaches Fifty Year Mark As National Weather Service Employee



H.H. Bedke, NWS Western Region Director (left), congratulates Mr. Halverson.

Alex Halverson, Chief of the Electronics Branch at the National Weather Service's Western Region headquarters, has reached a half-century of employment with NWS. Mr. Halverson entered the Weather Bureau at Walla Walla, Washington, in 1921 as an apprentice. He transferred to Seattle in 1939, and three years later, was assigned to Regional Headquarters in Seattle. In 1950, when the Los Angeles and Seattle Regional Offices were merged, he transferred to Salt Lake City. Mr. Halverson received the Department of Commerce Silver Medal in 1949.

NOAA Employees Honored for Length-of-Service

The following NOAA employees have received length-of-service awards:

NOS Pacific Marine Center - Jan.-March

30 years - Herschel C. Boushey, PMC.

25 years - Anton J. Micale, SURVEYOR.

20 years - William Mundt, PMC and Carl Veach, Special Projects Party, Las Vegas.

NWS Eastern Region - July - Sept. 1971

40 years - Ernest C. Johnson, Albany, N.Y., and Gean DiLauro, Binghamton, N.Y.

35 years - Homer D. Dyck, Cleveland, Ohio; William J. Cusick, Boston, Mass.

John M. Williams, Rochester, N.Y.; Frank

Zucker, New York; Raymond O. Munn, Washington, D.C.; and Roger S. Frantz, Hartford, Conn.

30 years - Harold L. Suiter, Huntington, W. Va.; Edward T. Clapp, Washington, D.C.; Charles J. Miller, Portland, Me.; Charles B. Fobes, Portland, Me.; Fred L. Horton, Roanoke, Va.; Henry U. Lawrence, Boston, Mass.; Elwood C. Gray, Cape Hatteras, N.C.; Victor E. McCrory, Washington, D.C.; Melvin A. Dybvik, Columbia, S.C.; Frederick Branden, Columbia, S.C.; Roy Rawls, Raleigh, N.C.; Herbert S. Groper, Trenton, N.J.; James J. Dunn, Bridgeport, Conn.; Joseph J. Sopko, Cleveland, Ohio; Moses A. Lopez, Charleston, S.C.; George W. R. Sykes, Portland, Me.; Paul F. Jacoby, Pittsburgh, Pa.; Harry L. Gorman, Allentown, Pa.; Max Traunfeld, New York; George A. Richardson, Columbia, S.C.; Harold E. Shipley, Cincinnati, Ohio; Francis L. Pellerin, Binghamton, N.Y.; Hubert M. Hynes, Boston, Mass.; Frederick D. Cothram, Asheville, N.C.; Irving Pullman, New York; Thomas E. Street, Greensboro, N.C.; Walter C. Sutton, Rochester, N.Y.; John A. Murray, Jr., Providence, R. I. Winfield C. Schomp, Newark, N. J.; Robert C. Butler, Pittsburgh, Pa.; Joseph L. Hudson, Washington, D.C.; John F. Liddle, Rochester, N.Y.; and Charles Frounfelkner, Cleveland, Ohio.

25 years - Vincent S. Sacco, Pittsburgh, Pa.; Leo Quintman, New York; Harold L. J. Coleman, Pittsburgh, Pa.; Donald A. Thompson, Wilkes-Barre, Scranton, Pa.; Joseph P. Dooley, Chatham, Mass.; Alex J. Kish, Clemson, S.C.; James F. Cizek, Portland, Me.; William L. Turner, Worcester, Mass.; Christopher Horseman, Boston, Mass.; Henry E. Wise, Washington, D.C.; Walter J. Stoddard, New York; Fred G. Bear, Washington, D.C.; Salvatore DeSena, New York;

and John R. Garton, Norfolk, Va. 20

years - Paul R. Lazarus, Buffalo, N.Y.;

William B. Ezell, Burlington, Vt.; Bern-

ard T. Schor, New York; Raymond B. Bli-

ven, Burlington, Vt.; Jeannette C. Poole,

Raleigh, N.C.; Gunther W. Reiss, New York;

Hubert W. Sprouse, Wallops Island, Va.;

Martin H. Michels, Phila., Pa.; Jack L.

Hummel, Syracuse, N.Y.; Alvin V. Terry,

Greenville-Spartanburg, S.C.; Donald E.

Halsey, Dayton, Ohio; Robert G. J. Ehr-

hart, Charleston, S.C.; Robert D. Paddock,

Cleveland, Ohio; Fidel A. Diorio, Hart-

ford, Conn.; Nelson M. Kauffman, Harris-

burg, Pa.; Richard W. Kelly, Wallops Is.,

Va.; Naomi U. Fisher, Columbus, Ohio;

William C. Lavris, Syracuse, N.Y.; Wil-

liam T. Winkert, New York; and Louise A.

Durall, New York.

NMFS Biological Lab., Oxford, Md. (March)

20 years - William A. O'Connell

NWS Western Region - May - July

50 years - Robert A. Halverson, WRH.

35 years - Herbert F. Huennekens, Bil-

lings, Mont.; Chester M. Veliquette, Sa-

cramento, Calif.; James E. Hainlin, Stock-

ton, Calif.; August W. Hovland, Bakers-

field, Calif.; and William A. Grimes,

Great Falls, Mont. 30 years - Walter C.

Henson, Reno, Nev.; Bernard L. Killion,

San Francisco; George W. Mannion, Oak-

land, Calif.; Harvey H. Matzner, Los Angeles;

Robert R. Roland, Lewiston, Idaho; Allen

S. Shupe, Salt Lake City; O. Rex Warner,

WRH; Richard C. Wise, Spokane, Wash.;

Arthur A. Arbanas, Salt Lake City; Hazen

H. Bedke, WRH; Walter J. Gully, WRH;

Anton A. Hannel, San Francisco; Robert E.

Lord, Boise, Idaho; and Raymond W. Williams,

San Francisco. 25 years - Herbert P. Ben-

ner, WRH; Thomas M. Cunningham, Reno, Nev.;

Richard E. Hambridge, Reno, Nev.; John B.

Smith, Phoenix, Ariz.; Donald L. Olson,

San Francisco; Bessie M. Paul, Billings,

Mont.; Donald T. Shankle, Salem, Oreg.;

Wayne E. Coffman, Billings, Mont.; Robert

D. Evans, WRH; George D. Mueller, Great

Falls, Mont.; and Seymour P. Zuckerman,

Tucson, Ariz. 20 years - Juanita T. John-

son, San Francisco; Lawrence W. Luxmore,

Medford, Oreg.; Faye M. Pranke, WRH; El-

mer D. Updegraff, Billings, Mont.; Willis

E. Huxman, Pomona, Calif.; Sanford B.

Van Leuven, Seattle, Wash.; Fern Gwynn,

WRH; and Warren G. Harding, Great Falls,

Mont.

Items to be considered for publication in NOAA WEEK should be submitted to: Office of Public Affairs, NOAA, Room 221, Bldg. 5, Rockville, Md. 20852. Phone (301) 490-8243.

National Oceanic and Atmospheric Administration

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