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NOAA Taking Steps To Enhance Safety of Nation's Boaters

Like Skylab 2, Weather Forecasts For Landing Were on Target

The Skylab 2 astronauts came down as planned some 830 miles southwest of San Diego, Calif., on June 22. Weather in that part of the ocean was uneventful for several days preceding the landing and was forecast to be satisfactory. At the time of landing, the primary recovery ship reported 1,800-foot broken clouds, 10 miles visibility, winds NNE at nine knots, and one-foot waves and four-foot swells. The forecast issued by the Spaceflight Meteorology Group of the National Weather Service called for 2,000-foot broken clouds, 10 miles visibility, and NNE winds at 12 knots and four-foot seas.

Although Skylab 2 has landed, the Houston Section of the SMG continues its support of NASA's Earth Resources Aircraft Program.

Washington Monument Stable; Has Sunk .41 Feet Since 1884

Measurements by the National Geodetic Survey reveal that the Washington Monument is so stable that it has settled less than one-half foot since it was completed in 1884. During the past 89 years, it has sunk .41 feet. NGS computations show that the monument, which weighs 81,120 tons, is settling at the rate of .0047 feet a year, .47 feet per century, or roughly one foot every 200 years. If this rate of subsidence continues, the monument will not disappear completely from view until the year 113,073--give or take a few thousand years.

Captain Leonard S. Baker, NGS Director, said the difference in elevation of the 555 1/2-foot structure is small by comparison with changes that have occurred in other parts of the country, and that the Washington Monument survey was part of a much larger project completed in 1971. Since then, the data have been undergoing careful processing.

The 1971 measurements were compared with those made at the monument in 1926 at a site within the edifice marked by a bronze disc. Comparisons were also made with bronze discs measured also in 1926, at the U.S. Capitol, Executive Building, Lafayette Park, Smithsonian Institution, and Union Station, in Washington, D. C.

Coinciding with the observance of National Safe Boating Week July 1-7, NOAA has announced that approximately 500 nautical charts of the Nation's coastal waters, estuaries, bays and rivers will be revised during the next 12 months to help promote the safety of the Nation's 50 million boaters. NOAA is a member of the National Safe Boating Committee which annually promotes the observance.

Revision of the charts is one in a series of steps in areas of major importance to recreational boaters, fishermen and commercial shipping being taken by the National Ocean Survey, the National Weather Service and the National Marine Fisheries Service.

Other steps being taken by NOAA to enhance boating safety during the next year will include:

- A changeover to largely automated chart production, a process which is expected to be completed by 1980.
- The addition to New England charts of navigational aids which enable boaters to establish their positions at sea.
- The publication of five new or virtually new charts covering the Mississippi River from New Orleans to Baton Rouge, La.; the north part of Keku Strait, Salisbury Sound, Peril Strait and Hoonah Sound, Southeast Alaska; Fort Pierce, Fla.; and Port Jefferson to Mt. Sinai, N.Y.
- The publication of an extensively revised chart for Florida which will display land areas by use of aerial photos.
- Hydrographic surveys along the south shore of Long Island, N.Y.; on the west coast of Florida in the Tampa Bay vicinity; in Chesapeake Bay, Md.; Potomac River, D.C., Md., and Va.; Wando River, S.C.; and Gunpowder River, Md.
- The issuance of nautical charts showing marine traffic separation lanes being established by the Coast Guard which lead to Boston Harbor, Mass.; Portland Harbor, Me.; Narragansett Bay, R.I.; and Buzzards Bay, Mass. In addition, charts will carry revised traffic separation lanes being established by the Coast Guard for the entrance to Chesapeake Bay.
- The distribution by NMFS of informational placards for commercial fishing vessels regarding helicopter evacuation of persons from vessels in distress or of persons requiring immediate emergency medical attention, and relating to medical assistance available to vessels.
- The NWS programs to safety afloat include preparation of forecasts covering specific coastal areas of the U.S. every six hours, and more often when conditions change rapidly.

(Continued on page 8)

Blondin Is NMFS Law Enforcement, Marine Mammal Protection Chief

Carmen J. Blondin has been appointed Chief of the National Marine Fisheries Service's Law Enforcement and Marine Mammal Protection Division. A recently retired U. S. Coast Guard Commander, he formerly was an attorney on the staff of the Coast Guard's Chief Counsel.



The Division's duties in administering the NMFS enforcement and surveillance programs recently were expanded to encompass major responsibility for the fulfillment of demands

set forth in the Marine Mammal Protection Act of 1972. The Commerce Department has designated NMFS as the executor of its part of the legislation dealing with seals, sea lions, whales, and porpoises.

Mr. Blondin has been involved in fisheries enforcement work for more than 12 years. As commander of a Coast Guard fisheries patrol vessel (1968-1970) in the North Pacific and the Bering Sea, he participated in many assignments related to the interpretation and enforcement of U.S. fisheries regulations. From 1964 to 1968, as chief of the Law Enforcement Branch at Coast Guard Headquarters in Washington, D. C., he was responsible for administration of U.S. fisheries law enforcement programs, and served as a delegate to a number of meetings dealing with international fisheries.

A 1955 graduate of the U.S. Coast Guard Academy, he received his law degree from George Washington University in 1962.

Albert R. Hinn Is MIC at Richmond, Va., WSO

Albert R. Hinn, a Senior Forecaster at Portland, Me., has been appointed Meteorologist in Charge at the Richmond, Va., National Weather Service Office. He will also hold the position of State User Services Representative.



Mr. Hinn

As a River District Office, the Richmond station collects river and rainfall data and disseminates river forecasts and flood warnings for portions of the rivers of the state.

Mr. Hinn entered the NWS in 1961 as an aviation briefer at JFK International Airport in New York City, and in 1966 transferred to Burlington, Vt., as assistant to the Meteorologist in Charge. He has been in Portland since 1971. He graduated from the City College of New York, where he received his meteorological training.

He succeeds Joseph Harden, who recently retired after more than 34 years of service.

Wave Propagation Laboratory Announces Senior Staff Changes

Three Boulder, Colo., scientists have assumed new duties within the Environmental Research Laboratories' Wave Propagation Laboratory in a series of senior staff changes announced by Dr. C. Gordon Little, Director of the Wave Propagation Laboratory.

Dr. Earl E. Gossard, chief of the geoacoustics research program area, has accepted the position of chief of the meteorological Doppler radar program area. He is replacing Richard Strauch who has served as acting chief of the group for the past two years but asked to be relieved of this management responsibility in order to more fully pursue his personal research objectives. Dr. Gossard joined NOAA in October, 1971, after heading the radio physics division at the Naval Electronics Laboratory Center in San Diego, Calif., for many years. He received the Center's annual award for outstanding scientific achievement in 1971. Dr. Gossard received his M.S. and Ph.D. degrees in physical oceanography from the University of California at La Jolla.

Dr. William H. Hooke, who has replaced Dr. Gossard as chief of the geoacoustics research program area, is currently a Fellow of the Cooperative Institute for Research in the Environmental Sciences, a lecturer in the department of astrophysics at the University of Colorado, and a physicist at the Wave Propagation Laboratory. After receiving a Ph.D. degree in geophysical sciences from the University of Chicago in 1967, he joined the U.S. Commerce Department's Boulder-based Institute for Telecommunication Sciences, and in 1970 he transferred to the Wave Propagation Laboratory. Dr. Hooke has studied the role of acoustic-gravity waves in ionospheric and atmospheric dynamics.

Dr. Donald E. Barrick, who has been appointed chief of a new program area of sea-state studies, is presently heading the laboratory's seascatter projects. He joined the Wave Propagation Laboratory in August 1972, after spending seven years at Battelle Columbus Laboratories in Ohio. Dr. Barrick was also an adjunct professor of electrical engineering at Ohio State University while at Battelle. He received his B.S., M.S., and Ph.D. degrees in electrical engineering from Ohio State University.

NCC Now Card Punching NWS Meteorological Data

The Environmental Data Service's National Climatic Center in Asheville, N.C., has assumed responsibility for card punching selective National Weather Service meteorological data. According to the agreement, NCC will card punch eight-hourly observations, daily summary, hourly precipitation, and solar radiation data on a reimbursable basis. These duties were previously performed by National Weather Service meteorological technicians at first-order stations. The transfer of card punching tasks to NCC releases these employees for other station duties.

United States and Canada Extend Reciprocal Fishing Agreement

Representatives of Canada and the United States, after meeting at Ottawa, have agreed to recommend that their governments extend for one year the 1970 Reciprocal Fisheries Agreement between the two countries, adding a number of modifications.

The U.S. delegation was led by Ambassador Donald L. McKernan, Coordinator of Ocean Affairs and Special Assistant for Fisheries and Wildlife, Department of State. NOAA was represented by Acting Director Dr. Robert W. Schoning, National Marine Fisheries Service. The group also included representatives of the States of Washington and Alaska, and industry representatives from the Pacific and Atlantic coasts. C.R. Levelton, Director General (Operations) of the Fisheries and Marine Service, Department of the Environment, headed the 30-member Canadian delegation.

In essence, the 1970 Reciprocal Fisheries Agreement recognized the desirability of a continuance of the fishing privileges traditionally conducted by each country in the 3- to 12-mile zone off the east and west coasts of both nations, south of 63 degrees north latitude. Many of the provisions set forth in the original agreement were not in contention during the 1973 meetings, and will remain in effect.

This year's meetings included discussions of problems surrounding the Pacific salmon fisheries of the two countries. Since salmon travel freely between the two countries, part of the catch of one country may have originated in the rivers of the other. Provisions incorporated in the 1970 Reciprocal Agreement recognizing limited salmon-fishing privileges by both countries were modified in the new agreement to reduce salmon fishing privileges by both sides in the reciprocal fishing areas.

Of major importance to the United States is that the Canadian spokesman in Ottawa rescinded a notice given at an earlier meeting on salmon interceptions--that Canada intended to take unilateral action with respect to extension of its net and troll fisheries off the west coast of Vancouver Island, in an effort to increase the Fraser River salmon harvest.

Delegates also agreed that subsequent meetings between the U.S. and Canada on the broad problem of interception of Pacific salmon would be held this fall in Vancouver.

NOAA/DCPA Letter of Agreement Promotes Community Preparedness

The Defense Civil Preparedness Agency/NOAA Letter of Agreement became effective on June 8. The agreement provides for joint management and operation of a National Program for Community Preparedness. It defines joint and individual agency responsibilities; sets up coordination mechanisms at all levels; and identifies actions that must be taken to begin the cooperative effort. Advance copies of the agreement have been sent to the regional directors of both agencies; printed copies are expected to be available for general distribution within three weeks. Although the agreement was several months in the making, action on the most firm provisions began well ahead of its completion.

Samuel O. Grimm, Jr., Chief of the NWS Emergency Warnings Branch, was given the additional responsibilities of NWS Community Preparedness Coordinator. Arlin Snider was assigned as NWS Community Preparedness Liaison Officer to DCPA in March and immediately established an office with DCPA.

During this period the regions began to expand their cooperative efforts. At least one NWS region planned and conducted a conference with its associated DCPA and Office of Emergency Preparedness regions; another plans a similar meeting this summer. Most, if not all, regions have made coordination contacts. Some resulted from the developing agreement; others were continued coordination of matters very similar to those being set down in the agreement.

Other actions to date have been: (1) increased numbers of National Warning System telephone drops at NWS field offices; (2) DCPA provision to NWS of monthly reports on the status of its On-Site Assistance Program; (3) NWS has provided DCPA with regional focal points and some charts of the distribution and/or probabilities of various natural disaster phenomena; and (4) DCPA and NWS preparedness and warning publications have been given widespread distribution throughout both organizations.

The WSOM Chapter on Community Preparedness is being put in final form and should be distributed soon. NWS regions have been requested to designate interim state Community Preparedness Focal Points to conduct coordination actions until Community Preparedness Specialists are on board.

First Shipment of Marine Geophysical Data Under EDS/USGS Agreement Received at NGSDC

The Environmental Data Service's National Geophysical and Solar-Terrestrial Data Center has received the first shipment of marine geophysical data under the terms of an agreement between the U.S. Geological Survey and EDS. Included in this shipment are the seismic reflection profile data for seven cruises.

The provisions of the agreement are that USGS will transfer its marine geological and geophysical data to NGSDC. In turn, NGSDC will provide data services to USGS from its holdings. For marine geological data, NGSDC will acquire, store, and disseminate detailed

and summary information about the USGS holdings; samples will not be stored. Cores, dredges, grabs, and bottom photographs are representative of the types of geological information NGSDC will be handling. The marine geophysical data to be given to NGSDC will consist mainly of bathymetric, magnetic, gravimetric, and seismic reflection data, along with the related precision navigation data. All the data will be available from NGSDC on either microfilm or magnetic tape about one year after collection.

NWS Aviation Branch Making Plans For Powder Puff Derby Forecasts

The Aviation Branch of the National Weather Service Weather Analysis and Prediction Division is making arrangements to have the weather forecasts for the July 13-16 All-Woman's Transcontinental Air Race (the Powder Puff Derby) placed in the Federal Aviation Administration's Kansas City Switch. This will be the first special aviation event for which forecasts prepared by designated Weather Service Forecast Offices and selected aviation weather forecasts along the routes will be included in the computer for special call-up. Instead of gathering information from each of the WSFO's along the route, as in the past, participants and NWS employees who brief them will be able to secure from one point all the weather data on the route that is available.

This innovation is the result of planning and work by many people. Ellis B. Burton, Aviation Services Operation Meteorologist of the NWS Western Region in Salt Lake City, Utah, was instrumental in promoting the idea, which was coordinated primarily by Edward M. Gross of the Domestic Aviation Branch at NWS Headquarters. Necessary arrangements with the other regions over which the ladies will fly was handled by the ASOM's: Howard R. Martin, Central Region, Kansas City, Mo.; Joe M. Sassman, Southern Region, Fort Worth, Tex.; and David R. Coulter, Eastern Region, Garden City, N.Y. John Haig and Ron Harris of the FAA's Air Traffic Services assisted in programming the computerization for the project.

Also for the first time, it is planned to have available at the pre-departure briefing of contestants by NWS personnel the latest satellite photos from the National Environmental Satellite Service, so they can see the weather over the entire route before they begin their flights.

Marine Biology Class Taught at Fisheries Center

The National Marine Fisheries Service's Atlantic Estuarine Fisheries Center at Beaufort, N.C., made available its facilities to a class in marine biology from the University of South Dakota. Environmental Marine Biology seems an unlikely course to be offered by U.S.D. at Vermillion, but due to the enthusiasm and initiative of Dr. W.H. Sill, Jr., Chairman of the Biology Department, and nine students, it was given this spring at Beaufort. The interim course was partially funded by a grant and the Duke University Marine Laboratory was the host institution.

NMFS and Duke University marine scientists were favorably impressed by the two graduate and seven senior undergraduates, who attended classes at night and spent their days in laboratory research and field collecting trips. The Atlantic Estuarine Fisheries Center was able to assist the group by presenting a lecture and slide show of its research, conducting an extensive tour of the facilities and discussing, at length, the various projects. The students, in turn, helped the Center on several extensive studies involving field sampling.

Research Seeks To Reduce Injuries to Migrating Fish

An experimental program designed to reduce injuries suffered by juvenile salmon and steelhead trout migrating down the Columbia River to the Pacific Ocean is currently being tested by the National Marine Fisheries Service in cooperation with the state fisheries agencies of Oregon, Washington, and Idaho. The evaluation of fish protective facilities at Little Goose Dam on the Snake River, a tributary of the Columbia, is being funded for the third consecutive year by the U. S. Army Corps of Engineers.

The project is under the direction of Dr. Gerald B. Collins, Director of the Division of Coastal Zone and Estuarine Studies, at the Northwest Fisheries Center in Seattle, Wash.

The fisheries scientists are developing ways of helping the fingerlings bypass turbine intakes by using devices such as traveling screens to divert them into gateways at the dam, from which they pass through orifices to a bypass pipe skirting the dam, and then into a collection area. Here the fish--four to eight inches long--are graded by size and marked and tagged for later identification. Some are transported by tank trucks about 350 miles downstream, thus avoiding seven dams, irrigation diversions, and predation by larger fish, and by birds and animals, and are released about 100 miles from the mouth of the Columbia. Others are released at Little Goose Dam to make their way to the ocean.

An experimental debris separator designed to remove 90 percent of the accumulation of debris at critical points in the grading facilities at Little Goose Dam is expected to lower (from about 15 percent) the number of migrating young fish whose scales or fins are injured there annually. NMFS said possibly five million young fish could pass through these grading facilities this year. The increase from one million last year comes from using nine traveling screens this year compared with three last year, and the fact that low water conditions this year markedly reduce the number of fish avoiding the gateways by going over the spillway.

Commissioned Corps Training Class To Assist In Survey of Kings Point, N.Y., Boat Harbor

A six-man National Ocean Survey hydrographic field party, headed by Lieutenant Richard K. Muller, is scheduled to begin soon a detailed hydrographic survey of the boat harbor of the U. S. Merchant Marine Academy at Kings Point, N. Y. This will be the first survey there in almost 40 years.

The field party will be assisted in the survey and data processing by the NOAA Commissioned Corps Training Class at Kings Point.

The survey will be carried out in a one-half square mile area, including the boat basin, approaches and anchorages, for use in proposed harbor expansion. Development of the harbor is planned to accommodate vessels with increased draft.

New Era in Nautical Chart Production Inaugurated by NOS

The National Ocean Survey has inaugurated a new era in nautical chart production with the publication of the first chart produced largely by automation. The prototype chart is the result of a ten-year, \$25 million program which is expected to become fully operational by 1980. By then, the NOS hopes to largely eliminate the slow and tedious manual preparations involved in the production of the approximately 2,500,000 charts it prints each year for coastal areas, estuaries, harbors, the Great Lakes, and various other lakes and rivers.

This first computer-supported chart (C&GS 414) covers a small portion of Mississippi Sound in the Gulf of Mexico, from Horn Island Pass into the harbor of Pascagoula, Miss. The initial printing of approximately 2,500 copies will record the publication of the first automated chart to be published by the National Ocean Survey with the words: "This publication utilized computer assistance and machine engraving techniques."

The chart is available for \$1.75 from the NOS Distribution Division (C44), Riverdale, Md., 20840, or from any NOS chart sales agent.

When the new program is fully operational, according to Rear Admiral Allen L. Powell, NOS Director, "We will be able to recall from the digital data files almost everything in the way of nautical data that now appears on our charts." The computer could provide, for example, a list of wrecks along the coast, including positions, depths of water above them, and possibly some information on the wrecks themselves; or a list of fish havens, shoal areas, and other sites considered favorable for fishing; or a list of navigational aids in a specific area.

Scientists Suggest Underwater Windmills in Gulf Stream May One Day Generate Power for Man

Three scientists--two of them with the Environmental Research Laboratories--suggest that man may one day use the energy of the northward flowing Gulf Stream to spin electric generators in systems the scientists liken to "underwater windmills."

Dr. Harris B. Stewart, Jr., Director, and physicist Dr. John R. Apel, of the Atlantic Oceanographic and Meteorological Laboratories, and Dr. William S. von Arx of Woods Hole (Mass.) Oceanographic Institution, propose that specialists in marine engineering, power engineering, and related fields get together to consider the economic and engineering feasibility of harnessing the Gulf Stream.

The "windmills" suggested by the scientists would be large, slow turbines which resemble windmills in that they have a relatively small number of slanted blades arranged circularly around a central shaft--as contrasted with a high-pressure steam turbine which sometimes has hundreds of blades. For 1,000 megawatts' generating capacity, the scientists suggest about 200 turbines could be arrayed across part of the channel between Florida and Bimini at depths between about 100 and 400 feet.

The turbines would be enclosed in housings, one end open toward the current. Each turbine would have its own generator, and cables anchoring the turbine-generators to the ocean floor would also carry the power generated to a master cable on the bottom. The entire

Captain John O. Boyer, Chief of the NOS Marine Chart Division, says that automation will speed up production of new charts to four to six months (instead of 12-18 months) and of revised charts to three months or less (instead of the five months it now takes).

Developing and implementing automation equipment throughout the entire nautical charting system is being carried out in the NOS by the Office of Marine Technology's Marine Data Systems Project, headed by Captain Clinton D. Upham. Converting the present nautical chart file of hydrographic surveys from graphic format to machine-processable digital format is being performed for the NOS by the Environmental Data Service's National Climatic Center. This work was begun by the Asheville, N.C., facility in 1972, and completion is anticipated in 1976.

The transfer from a manual to an automated process for the Mississippi Sound chart was performed by a special team of Marine Chart Division cartographers and cartographic technicians under the supervision of George Johnson.

The chart automation program, which is being carried out at the NOS Rockville, Md., headquarters, has been supplemented in the field by advances in the processing of the hydrographic survey data which form the basic ingredient for the charts. Computerized systems have been installed aboard four major NOAA vessels and six of their auxiliary launches, and in addition, a computerized hydrographic survey data processing system was established recently at the Atlantic Marine Center in Norfolk, Va. A similar system will be installed at the Pacific Marine Center in Seattle, Wash., next January.

array would be in a line about 12 miles long and perpendicular to the current.

"There is no doubt," says Dr. Apel, "that some potential exists from the oceanographic point of view. The Florida Current, a major component of the Gulf Stream, carries more than 50 times the total flow of all the fresh water rivers of the world right past Miami's front door. The average velocity in the zone between Florida and Bimini is two miles per hour, but near the surface, the speed sometimes exceeds 5.5 miles per hour."

Dr. Apel says calculations show that water flowing in the upper layers of the Florida Current could produce about 0.8 kilowatt of power per square meter of cross section of the stream if this energy could be extracted. This is over ten times the average energy per square meter of solar cells available from sunlight in the south Florida area. The total energy of motion of the current could thus produce about 25,000 megawatts--the output of 25 of the largest powerplants built by man--if all the energy could be harnessed.

However, the scientists propose studies of extraction of only about four percent of the total available energy--about 1,000 megawatts, the output of a single large nuclear station. "Significantly larger amounts continuously taken out might seriously alter the Gulf Stream flow patterns and disrupt climatic conditions to the north and east," says Dr. Apel.

notes about people

Dr. Thomas S. Austin, Director of the Environmental Data Service, and William N. Stevenson, Manager of the National Marine Fisheries Service's Fisheries Engineering Laboratory at the Mississippi Test Facility in Bay St. Louis, Miss., presented papers at the American Astronautical Society's International Congress of Space Benefits in Dallas, Tex., recently. Thomas M. Vanselow, Assistant to the Director of the NMFS Southeast Fisheries Center, had co-authored the paper presented by Mr. Stevenson.

Dr. George H. Ludwig, Director of Systems Integration of the National Environmental Satellite Service, chaired the session on Data Management at the Congress, which was convened to help focus attention on what space exploration is doing and can do for the benefit of all mankind. Participants included leading space scientists from the U.S. and other countries.

Dr. Reuben Lasker, Physiologist at the National Marine Fisheries Service's Southwest Fisheries Center, La Jolla (Calif.) Laboratory, has been notified that he has been promoted from Adjunct Associate Professor to Adjunct Professor of Marine Biology, University of California, San Diego.

Feodor Ostapoff, Director of the Sea-Air Interaction Laboratory of the Environmental Research Laboratories' Miami-based Atlantic Oceanographic and Meteorological Laboratories, recently participated in the Global Atmospheric Research Program's Atlantic Tropical Experiment (GATE) oceanographic planning meetings in London, England, and later in Hamburg and Kiel, Federal Republic of Germany. Mr. Ostapoff is one of two designated U.S. representatives on the Scientific Committee on Oceanic Research Working Group 43. The other member is Professor Walter Doring of the University of Miami.

At the invitation of the Smithsonian Institution, William M. Nicholson, Associate Director of the National Ocean Survey's Office of Marine Technology, is a member of the panel investigating the recent accident of the Johnson-Sea-Link Research Submersible off the Florida coast in which two divers lost their lives.

James N. Jordan, chief of the Special Seismological Analysis Branch of the Environmental Research Laboratories' Earth Sciences Laboratories, has been appointed to head the U.S. delegation to the Commission on Geophysics of the Pan American Institute of Geography and History. He has actively participated in the development of seismological investigations programs in Mexico and other Latin American Countries during the past 20 years while employed by NOAA and the former Coast and Geodetic Survey. The Pan American Institute, a specialized arm of the Organization of American States, consists of four principal commissions: history, geography, cartography and geophysics, each with a delegation from the 21 member countries. The Commission on Geophysics consists of three committees: Solid Earth, Oceans and Atmospheres, and Solar-Terrestrial Physics.

Dr. William F. Perrin, Fishery Biologist at the National Marine Fisheries Service's Southwest Fisheries Center, La Jolla (Calif.) Laboratory, has been appointed Research Associate in the Department of Vertebrate Zoology at the Smithsonian Institution. The three-year appointment is in recognition of "productive research in marine mammalogy... an alliance with (Smithsonian) marine mammal programs."

Dr. Harris B. Stewart, Jr., Director of the Environmental Research Laboratories' Atlantic Oceanographic and Meteorological Laboratories in Miami, Fla., has been appointed chairman of the U.S. delegation to the sixth meeting of the International Coordination Group for CICAR, the Cooperative Investigation of the Caribbean and Adjacent Regions, in Cartagena, Colombia, July 16-24. He is the U. S. national coordinator for CICAR. Dr. Robert Molinari of AOML's Physical Oceanography Laboratory; Harvey Bullis, Director of the National Marine Fisheries Service's Southeast Fisheries Center; Rene Cuzon du Rest of the Environmental Data Service's National Oceanographic Data Center; and Dr. James Case of the U.S. Geological Survey complete the delegation.

James T. Stapleton, mark maintenance engineer working out of Seattle, Wash.,



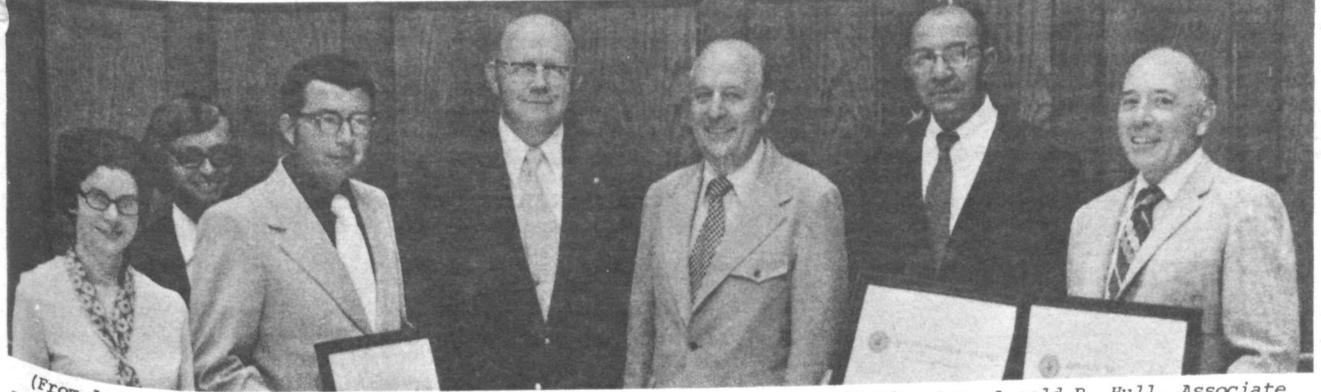
will represent the National Geodetic Survey at the Boy Scout Jamboree at Far-ragut State Park, near Coeur D'Alene, Idaho, August 1-7.

The main National Geodetic Survey exhibit will be a 90-foot Bilby Steel Tower which will be associated with exhibits of the National Weather Service and the National Marine Fisheries Service.

Izadore Barrett, Deputy Director of the National Marine Fisheries Service's Southwest Fisheries Center, has been reappointed by Mayor Pete Wilson of San Diego to the San Diego-La Jolla Underwater Park Advisory Committee for a two-year term. Mr. Barrett is a charter member of the Committee which was established in 1970 to work with city and state groups in the development of an underwater preserve for aquatic conservation studies, fish counts, and underwater exploration and photography.

Carmen Johnson, Rene Cuzon, and Robert Lockerman, of the Environmental Data Service's National Oceanographic Data Center, have completed follow-up travel in connection with the United Nations Educational, Scientific and Cultural Organization-sponsored Agency for International Development-funded training courses given at NODC in Ocean Data Management. Contacted, to evaluate results of training received at NODC and its impact on national marine programs, were the Comision Colombiana Oceanografica, Bogota, Colombia; the Instituto del Mar, Lima, Peru; the Instituto Geografico Nacional, Guatemala; the Instituto Oceanografico de la Armada, Guayaquil, Ecuador; and the Secretaria de Marina, Mexico City, Mexico.

Five National Climatic Center Employees Receive Bronze Medals



(From left) Ms. Dyer; Mr. Quayle; Mr. Bartlett; William H. Haggard, NCC Director; Arnold R. Hull, Associate Director for Climatology, Environmental Data Service; Mr. Vinson; and Mr. Whiting.

Five employees of the Environmental Data Service's National Climatic Center recently were presented Department of Commerce Bronze Medals in a ceremony at the NCC in Asheville, N.C. Arnold R. Hull, EDS Associate Director for Climatology, made the presentations.

William D. Bartlett, Supervisory Meteorologist in the Archives Section, was cited for "his outstanding leadership and management of the Archives Program and for his consistent display of initiative, expertise, and diplomacy."

Ms. Thelma E. Dyer, Meteorological Technician in the Project Coordination Group, was recognized for her "sustained excellence in preparing and maintaining the integrity of documentary index materials to describe the National Climatic Center's unpublished data summaries."

Robert G. Quayle, Supervisory Meteorologist in the Climatic Analysis Branch, was honored for his "significant work in marine climatology and the authorship of marine climatic atlases and special environmental studies."

Roosevelt Vinson, Supervisory Clerk in the Procurement and Supply Section, was cited "for his demonstrated superior leadership and management of the Supply Unit and for his active role in promoting and fostering equal employment opportunity through community, civic and veterans organizations."

Dick M. Whiting, Meteorologist in the Statistical Climatology Branch, was recognized "for superior efforts in quality control of basic climatological data furnished to users and for his outstanding contributions to the Periodic Summarization of Climate Program."

Japanese Tour Alaskan Ports and Fisheries Lab

Bob Thorstenson, a former member of the Marine Fisheries Advisory Committee, recently escorted Japanese importers to several Alaskan fishery ports and the Auke Bay Fisheries Laboratory of the National Marine Fisheries Service. While at the Auke Bay Fisheries Laboratory, the visitors expressed interest in herring fillets and roe, capelin, smolt, Alaska pollock, snails, and sea urchins. At Petersburg, Alaska, they observed Mr. Thorstenson's new herring filletting operation that currently produces fillets for Germany, milt for England, and roe for Japan.

Japan is the biggest customer for all Alaskan exports with fishery exports amounting to about \$20 million annually. Japanese interest runs high for a broad array of products from underutilized Alaskan species.



(From left) Mrs. Thorstenson; Mr. Thorstenson; Mr. Kaji, Mr. Kitana, and Mr. Ishizaki from Hokkaido; and Dr. William A. Smoker, Director of the Auke Bay Fisheries Laboratory.

K. L. Keeney To Head Lewiston, Idaho, WSO

Kenneth L. Keeney, Official in Charge of the National Weather Service Office in Winslow, Ariz., has been selected for reassignment as Official in Charge of the Weather Service Office in Lewiston, Idaho. He will replace Robert R. Roland, who retired on June 30.



Mr. Keeney

Before being assigned at Winslow two years ago, Mr. Keeney served at Twin Falls, Idaho, and Quilley, Wash. Also, he had completed 20 years' service in the Air Force as an observer and forecaster.

DAVIDSON Reports Progress on Alaskan Survey

The NOAA Ship DAVIDSON reports that it has completed 471 nautical miles (91 square nautical miles) of hydrographic surveys in Prince William Sound, Alaska. The survey is part of a project to chart a navigable channel for deep draft vessels from Valdez, terminus of the proposed oil pipeline from the Arctic, to beyond Sea Rocks, just south of Hinchinbrook Entrance and out into the Gulf of Alaska. The DAVIDSON is under the command of Commander Michael H. Fleming and carries a complement of 36 officers and crew.

recipe of the week



SPICY PAN-FRIED WHITING

3 pounds pan-dressed whiting or other pan-dressed fish, fresh or frozen
1 cup yellow cornmeal
1 1/2 teaspoons paprika
1 teaspoon salt
1/2 teaspoon celery salt
1/2 teaspoon pepper
1/4 teaspoon dry mustard
1/4 teaspoon onion powder
Fat for frying
Lemon wedges

Thaw frozen fish. Clean, wash, and dry fish. Combine cornmeal and seasonings. Roll fish in seasoned cornmeal. Place fish in a single layer in hot fat in a 12-inch fry pan. Fry at a moderate heat for 4 to 5 minutes or until brown. Turn carefully. Fry 4 to 5 minutes longer or until fish are brown and flake easily when tested with a fork. Drain on absorbent paper. Serve with lemon wedges. Makes 6 servings.

Boating Safety Steps (Continued from page 1)

When strong winds or hazardous seas are anticipated, these forecasts include statements of the degree of hazard and the areas where warning signals will be displayed. Similar forecasts and warnings are issued for many inland lakes, reservoirs and waterways. The information is received by boaters over commercial radio and TV. In a growing number of shore areas, weather information can now be received through 65 NWS VHF-FM radio stations which continuously repeat taped weather messages every four to six minutes. The reports are updated periodically, usually every two to three hours, and revised to meet fast-changing weather.

The NWS also has established a more widespread distribution of its "Marine Weather Services Charts," which list for various coastal areas and the Great Lakes information on how to obtain up-to-date weather information. The charts are available from the NOS' 1038 nautical chart sales agents.

ERL Scientist Links Sea Breeze, Thunderstorms, Prevailing Winds

An Environmental Research Laboratories scientist has linked thunderstorm cloud formation with converging wind zones along coastal regions, and with the direction of large-scale prevailing winds.

Dr. Roger Pielke, a research meteorologist at the Experimental Meteorology Laboratory in Miami, Fla., has developed a mathematical model of the sea breeze--a circulation that forms as a result of the diurnal heating of land relative to neighboring water bodies--which shows areas of wind convergence and, by inference, rainfall patterns over southern Florida.

The sea-breeze model will have predictive value for weather forecasters as a reference tool when enough data are available to permit comparisons of similar sets of weather conditions for any given day.

The research may also have a major impact on NOAA's cloud-seeding program. The Experimental Meteorology Laboratory has been conducting weather-modification experiments to generate dynamic cloud growth. With a suitable juxtaposition of clouds, mergers result, producing more rainfall, over longer periods of time, than their individual cloud components would separately. Dr. Pielke's findings suggest that the mergers involve sea breeze organized cloud systems. His model may help the Miami experiments identify these cloud systems, and so improve cloud-seeding efficiency.

"With suitable modifications," he says, "such as adding topography and allowing time changes in the large-scale prevailing wind, the model can be used to predict sea-breeze patterns in any region in the world. Incorporating further modifications, the model can be adapted to simulate such atmospheric phenomena as air flow over a mountain, the urban 'heat island' effect, mountain-valley winds, and pollution dispersion."

According to Dr. Pielke, the prevailing direction of large-scale winds during the summer over south Florida on days without significant organized large-scale disturbances (undisturbed days) has a profound influence on the weather at any given location. Over Miami, for example when the large-scale winds are from the southwest, cumulus clouds develop early in the day. By afternoon the cumulus clouds build into huge thunderstorm complexes with heavy rain and lightning.

In contrast, when the large-scale winds are out of the southeast on undisturbed days, Miami has virtually cloudless, sunny afternoons. On these days there frequently are early morning showers from shallow cumulus clouds. Later in the morning large cumulus clouds form west of the city and move northward during the day, building into thunderstorm complexes. By late afternoon huge thunderstorms line the western horizon while the sky over Miami is cloudfree.

Items to be considered for publication in NOAA WEEK should be submitted to:
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