



Volume 5
 Number 11
 June 2, 1980

U.S. DEPARTMENT OF COMMERCE

NOAA news

National Oceanic and Atmospheric Administration



Best seller—Commerce Secretary Philip M. Klutznick receives one of the first copies of the revised NOAA Diving Manual from NOAA Administrator Richard A. Frank.

Diving Manual Issued

A revised and updated edition of the world's most complete scuba diving manual with an all-new section on accident management has been issued by NOAA.

The publication, *NOAA Diving Manual*, was originally intended mainly for the use of NOAA's more than 300 scientific and working divers. The manual has become so popular in commercial and recreational diving circles that the 24,000 copies of the first edition were sold out more than a year ago.

"As part of its responsibilities in ocean research and management, NOAA has a major interest in water safety," said Richard A. Frank, administrator of NOAA. "The burgeoning interest in scuba diving for recreation affords new excitement and physical well-being for many Americans. We want to help ensure that they have the best training and knowledge possible so that they can safely

enjoy the sport.

"The new edition will obviously satisfy a great demand," he said, "and it is badly needed because of major changes in many areas of diver safety since the first edition was published. This is especially the case with information on emergency medical care. We believe the manual will be a major contribution to safe and enjoyable scuba diving in the United States."

The accident management chapter discusses training, scuba rescue, and evacuation procedures. It also offers detailed guidance on identifying possible problems, making emergency rescues, and acting when the Coast Guard search-and-rescue teams show up, including the use of hand signals needed for effective emergency communications.

Edited by Dr. James Miller of NOAA's Undersea Research program, the 550-page

(Continued on p. 2)

"Creating A New Coastal Awareness" — Glazer

The following report was written by Michael Glazer, assistant administrator for Coastal Zone Management, for the *EPA Journal*. Because we think NOAA employees also will find it well worth reading, we are reprinting it almost in its entirety. -- The Editors.

The decade of the 1970's saw a dramatic change in public attitude about the environment in general and the Nation's coasts in particular. In addition to legislation aimed at improving the quality of the air we breathe and the water we drink, the Congress in 1972 passed the

Coastal Zone Management Act.

The philosophical impetus for the law was straightforward and direct: the coastal areas of the United States simply would not take care of themselves. Although such a notion had in fact been widely held throughout the 1950's and '60's, it became increasingly clear in the 1970's that the country's coastal areas held valuable but finite resources. And these resources were coming up against increasing and frequently contradictory pressures—growing recreational, residential, and commercial uses were confronting pres-

ures to preserve our rapidly diminishing wilderness areas and our valuable fish and wildlife habitats.

Adding to the problem was the almost exponential rise in the coastal population, with fully half of the country's citizens living within 50 miles of the coast and nine of our ten largest cities locating on the Atlantic, Pacific, Gulf, or Great Lakes coasts.

The Coastal Zone Management Act, administered by the National Oceanic and Atmospheric Administration's Office of Coastal Zone Management, began making grants to the States in 1974. Those

Federal dollars were available to States initially to prepare plans to resolve conflicts over coastal land uses. The program is voluntary and is flexible enough to allow each State's program to re-

(Continued on p. 8)



LIGHTNING! NOAA can now map it!
 See story on page 5.

LETTER FROM THE LABS

By Richard Newell

The State of ERL—Dr. Wilmot N. Hess, director of the Environmental Research Laboratories, in his annual "State of ERL" presentation, recently described several important projects and studies being carried on within the labs. A summary of a few of the highlights of his talk follows.

NOAA's two WP-3D Orion aircraft, based in Miami at the Research Facilities Center, are among the best instrument platforms in the world for doing science and have really come into their own in the last two years. The P-3's "belly radar" is an extremely important storm surveillance device. Whereas the hurricane hunters of years past had to penetrate these storms with no clear idea of their structure, they now have this sophisticated doppler radar to guide them. It not only secures very good wind data, it also shows us where the rain bands are. Another unique feature of the P-3 is a side-looking tail radar that gives a vertical presentation of storm structure, allowing us to pinpoint the position of growing cloud towers outside the storm's eye wall.

The P-3 observes hurricane landfalls in support of Project Hurricane Strike, providing a steady flow of storm data to National Hurricane Center forecasters.

The NOAA aircraft can't pursue the hurricanes ashore because of the danger of severe thunderstorms and tornadoes. Therefore, during the 1980 hurricane season, the P-3 flights will be augmented by a special land-based observing network along the Gulf and southeast coastlines. Instrument packages will be installed on power towers and telephone poles near the predicted zones of hurricane landfalls, about 24 hours before the storm arrives.

* * * *

Cloud Seeding Study—Dr. William L. Woodley of the National Hurricane and Experimental Meteorology Laboratory in Miami is supervising studies in two important areas: cloud seeding and rain estimates. NHEML's Cumulus Group is trying to determine the extent to which rainfall can be increased when an area of suitable cumulus clouds is seeded—initial estimates, during the first phase of the Florida Area Cumulus

Experiment (FACE), are that rainfall can be boosted by 30 to 40 percent. The results of the second phase of the experiment should be available by next spring.

Meanwhile, Woodley is working with Boulder researchers Cecelia G. Griffith, John A. Augustine, and Jose G. Meitin, Jr., on a rain estimation technique based on satellite data. The input data are the cloud area, cloud top temperatures, and the stage of the cloud's life cycle—the larger, higher, actively-growing convective clouds tend to produce more rain.

* * * *

Project SESAME—Dr. Stanley L. Barnes, as manager of Project SESAME (Severe Environmental Storms and Mesoscale Experiment), is guiding our first major attempt to understand severe storms on a regional scale. To do this, scientists from NOAA and other agencies last spring used data from satellites and the sounding balloons released every three hours on days with high storm potential. Also individual storms were observed with aircraft and a denser, more elaborate, network in

the area of the National Severe Storms Laboratory at Norman, Oklahoma, in order to examine how severe weather develops—why some storms grow and others fizzle out.

Chase teams, sent out by automobile to get close-up tornado photos, added greatly to our knowledge of these storms. The pictures reveal that some tornadoes form as several funnels moving around the periphery of a circle, and these vortices come and go. This helps to explain the peculiar damage patterns that are often observed.

* * * *

Watching the Great Lakes—Real-time predictions of water levels in the Great Lakes are now being made twice each day by the National Weather Service. The prediction model, developed by David J. Schwab of the Great Lakes Environmental Research Laboratory in Ann Arbor, forecasts hour-to-hour water levels for specified wind conditions. This includes the effects of storm surges, which increase the danger of coastal flooding by piling water up on the down-wind shore.

Diving Manual Issued *(Continued from p. 1)*

manual contains hundreds of photographs, diagrams, drawings and charts that supplement and help clarify the text.

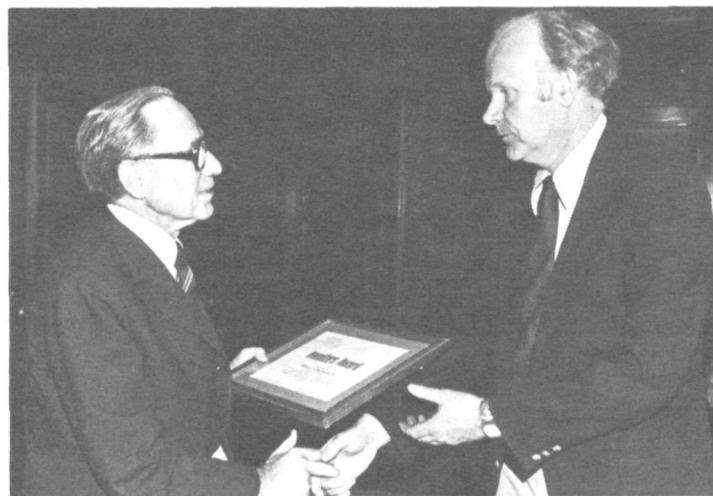
Major revisions also have been made in the chapters on first aid and diving medicine because of the many changes during the last five years in emergency medical care and advances in medical knowledge. Medical specialists and diving physicians acted as consultants in reworking this section.

The chapter on science diving also has been revised and now describes many new techniques not previously discussed. The manual also covers such new activi-

ties as tagging fish and describes recently developed underwater work aids. One example of the latter is a pneumatic coring device that uses air from a scuba tank enabling a geologist-diver to obtain cores without the support of a large ship.

The chapter on saturation diving has been completely re-written to cover the many advances of recent years.

Almost 100 physicians, divers, scientists, and equipment specialists acted as advisors and contributed to the new manual, which is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., for \$13.00.



Award Secretary of Commerce Philip M. Klutznick presents an Invention Incentive Award to Dr. Alfred J. Bedard, Jr., a physicist with NOAA's Wave Propagation Lab., Boulder, Co. Bedard was honored for inventing a wind-sensing device which has no moving parts, and does not freeze.

Creating A New Coastal Awareness

(Continued from p. 1)

flect its own needs and issues. Each State that chooses to take part must define its coastal boundaries, determine what land and water uses it will permit, and set priorities for those uses. And of course each State must create a management structure to carry out and enforce its program.

To the surprise of even those who were sanguine about the program in its early days, all 35 eligible States and territories have received planning-grants from the Federal coastal management office. In addition, by the end of the first quarter of this year, 19 coastal States and territories, representing more than two-thirds of the Nation's coastline, were operating under some form of Federally approved coastal management program. In human terms that means that some 45 million coastal residents, fully half the population that lives in coastal counties, are assured that such diverse elements as energy, recreation, port development, and residential housing are being approached rationally and intelligently.

What have the States accomplished? Although some States are still in the plan-

ning stage of their coastal programs and only two of the 19 States with approved programs have been operating for more than two years, results are already apparent, especially in the area of protecting natural resources.

A number of States have used their Federal dollars to establish brand new programs to protect wetlands, barrier islands, fish and wildlife habitats, and beaches and sand dunes.

Other States are trying to find out what kind of development they should allow on the coast and where that development should take place. For example, Maryland has come up with a program for power plant siting that we think is exemplary. And in California, the State's coastal commission has identified locations that it considers inappropriate for power plants as well as sites that are appropriate for liquefied natural gas facilities.

In addition to State coastal programs, which form the core of the Federal program's business, the Office of Coastal Zone Management has established two related coastal programs that could have far-reaching consequences for the protection of our valuable coastal resources: the marine sanctuary program and the estuarine sanctuary program.

To date, only two marine sanctuaries have been designated: The Monitor Marine Sanctuary, which protects the wreck of the famous Civil War ironclad off Cape Hatteras, N.C., and the Key Largo Marine Sanctuary, which protects some 100 square miles of fragile coral reef off Florida's southeast coast. We anticipate that others will soon be designated, including areas off the coasts of California, Louisiana, Texas, and Hawaii.

There are now seven individual sanctuaries in Oregon, Georgia, Hawaii, Ohio, California, and Florida. The estuaries are to be kept as undisturbed as possible so

that scientists can study the naturally functioning system and can use the areas as controls against which to measure ecological changes in other unprotected estuaries.

In addition, the sanctuaries provide students and the public with a place where they can learn about the ecology and the environment in a natural setting. And they afford protection for vital habitats of estuarine-dependent animals and plants, including endangered species.

Ironically, one aspect of coastal zone management—a critically important one—won't show up in any review of the program or in any statistical table on the number of States participating. That is the creation of a coastal awareness at the grass roots level, a kind of a coastal ethic, if you will. The fact that 1980 has been designated the Year of the Coast heightens the hope that such an ethic will become ingrained into our government, our business, and our private lives.



States' CZ Efforts Cited

Assistant Administrator Michael Glazer has cited the following states for their efforts to enforce existing coastal zone programs:

“● Since entering the Federal program, South Carolina, Louisiana, the Virgin Islands, and Texas all have enacted for the first time laws to regulate wetland development.

“● Seven States are providing new protection for animal habitats.

“● Four States have mandated setback lines for construction near beaches and sand dunes to protect these resources from new development.

“In addition to protecting coastal resources themselves, a rewardingly large number of States is coming to grips with the problem of protecting cit-

izens from natural coastal hazards.

“Among the States that are trying to prevent thoughtless development in hazardous areas are:

“● North Carolina, whose 300 miles of shoreline, much of it barrier islands, is among the most strictly controlled in the country.

“● Rhode Island, whose coastal management program prohibits development on any of the State's 18 undeveloped barrier islands.

“● Texas, which has set up a hurricane awareness program to educate its citizens about the dangers of building in hurricane-prone areas and about the safest actions to take in the event of a tropical storm.”

Royal Navy, NOS Arrange Officer Exchange

The United Kingdom's Royal Navy and the National Ocean Survey have arranged the first exchange of commissioned officers to occur since Thomas Jefferson established NOS' predecessor, the Survey of the Coast, in 1807.

The two officers selected from the six-month exchange are Lt. Cdr. D. C. Boutle of the Royal Navy and Lt. Cdr. T. W. Richards of NOAA.

Richards will arrive in London June 18 for assignment aboard *HMS Herald* as navigating officer. Boutle, who is presently serving as navigating officer of *HMS*

Herald, will be assigned to the NOAA Ship *Fairweather*, a 231-foot hydrographic survey vessel working out of Seattle, Wash.

Rear Admiral Herbert R. Lippold, Director of NOS, said the exchange will provide an opportunity for informal discussions with the Royal Navy on common problems and give the two officers exposure to the international demands of nautical charting that they can share with their organizations.

Richards will join *HMS Herald* June 27 for survey

work along the Scottish coast. The 260-foot *Herald*, with a cruising speed of 14 knots, carries a complement of 128 officers and crew. The ship is fitted with a Hydroplot satellite navigation system, computerized data logging, gravimeter, magnetometer, sonars, echo-sounders, coring and oceanographic winches, passive stabilization tank, bow thruster and two surveying motor boats. Its range is 12,000 miles at 11 knots.

The *Fairweather* operates off the U.S. Pacific coast, in Alaska coastal waters, and off the Hawaiian Islands. Its

complement consists of 17 officers, 52 crew, and it can accommodate four scientists.

Designed and outfitted for hydrographic surveying involving nautical charting, the *Fairweather* has a cruising speed of 13 knots and a range of 7,000 nautical miles. The ship is equipped with the National Ocean Survey's Hydroplot system, dedicated to the real-time acquisition and processing of hydrographic data. An identical Hydroplot system is also installed in two 30-foot survey launches aboard the ship.

Clarence Cope of NMFS to Assist Brazil's Fishing Industry



The United Nation's Food and Agriculture Organization (FAO) has tapped NOAA's Clarence Cope for a second time to assist a Latin American nation develop its fishery resources.

On June 6, Cope departs for Brazil on a two-year tour of duty as chief technical advisor and fish marketing economist to that government. In 1971, the FOA arranged for Cope to take leave of absence from NOAA to serve in the same capacity in Peru.

Cope, who will work from offices in the new city of Brasilia, will advise a counterpart in the Brazilian government on developing marketing information systems, arrange training tours for Brazilians to study the fishery techniques of the United States' industry, organize workshops for Brazil's international and domestic fisheries marketing staff and advise that country's food and fish technologist.

"It is a chance to help another nation develop

its fisheries and it's also an opportunity to start on the ground floor and watch the entire project come to fruition," Cope said of his new assignment. "I also will bring back a great deal of learning from this experience."

Cope, who has been with NOAA since its inception, will begin his tour of duty with a briefing by the FOA in Rome and then travel on to Brasilia. He has been a consumer affairs specialist with the NMFS since 1974.

NOAA Employee Rescues Two from Fire

Fletcher Eckard claims that it was no "big deal." But Mrs. Martha Wells of 1802 First Street, N.W., in Washington, thinks otherwise. On the morning of Thursday, May 15, the NOAA employee went into Mrs. Wells' burning home and rescued her son, Freeman, 12, and daughter, Bene Ta Tastar, 17, probably saving their lives.

It happened this way: At about 8:15 a.m., Eckard, a member of the safety and management staff in the Office of Management and Budget, started his drive to work. As he turned a corner about a half block from his home, he saw a crowd

gathered in front of a burning row house.

Eckard said by-standers and people in parked cars watched as the structure burned and a woman on the lawn cried hysterically. Parking his car, he rushed to the woman and asked if there were anyone inside. She told him that her two children were.

Requesting that someone call the fire department, Eckard rushed into the burning house. The smoke was too dense for him to see very far, so he called out and asked if anyone could hear him. Freeman and Bene Ta Tastar answered and

Eckard directed them to lie down on the floor and crawl toward the sound of the voice. When they reached him, Eckard ordered them to run outside as quickly as possible.

Eckard asked the relieved mother if there were anyone else inside. When she replied no, he rushed away without learning the name of the family he had helped. Eckard said he was "late for work." About two minutes later, he heard the sound of the fire engines.

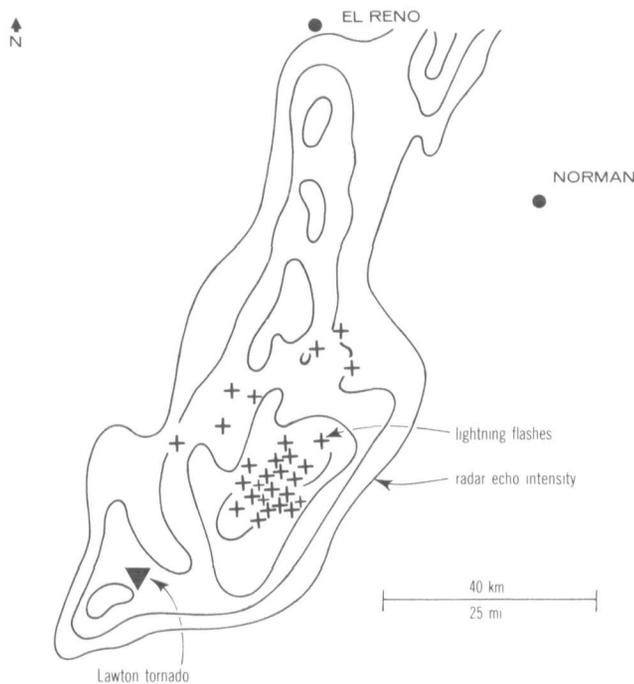
In his safety management job, Eckard is responsible for helping with evacuation procedures for the Washington



area during a civil emergency.

He transferred to this area in 1975 from the NMFS division in Woods Hole, Mass., under the upward mobility program.

Maps of Lightning Strikes Aid Storm Studies



Lightning Maps—This “map” of the storm that tore through Lawton, Okla., on April 10, 1979, depicts lightning activity for a five-minute period about 25 minutes after the tornado left the ground. The storm’s peak flash rate of eight per minute occurred during this period. The ground strike points are concentrated on the leading edge of the core of the north-eastward-moving storm.

The clearest picture yet of the electrical activity evolving from a tornado-producing thunderstorm shows that cloud-to-ground lightning hugged the leading edge of the storm center and became active only after the tornado died off.

This information was gained from a NOAA study of last spring’s major tornado in Lawton, Oklahoma. The storm was one of 11 produced when an intense squall line formed in northern Texas and central Oklahoma. The severe storm activity on April 10 killed 54 persons in Lawton, and in Wichita Falls and Vernon, Texas.

Michael W. Maier of the National Hurricane and Experimental Meteorology Laboratory in Coral Gables, Fla., and Albert G. Boulanger, now with the University of Illinois, headed the study. Their research, funded by the Nuclear Regulatory Commission, related the time and location of cloud-to-ground lightning to the structure and

evolution of the Lawton storm.

“The connection between lightning and the dynamics of severe storms is poorly understood,” said Maier, “the reason being that we lack definitive observations.” Maier and Boulanger have taken a step toward filling this data gap by producing the first maps of cloud-to-ground lightning for a severe, tornado-producing thunderstorm.

The lightning maps show that during the 60-minute electrically active lifetime of the Lawton storm, the flash rate of ground strokes averaged about three per minute. The peak flash rate of over eight per minute occurred 20 minutes after the tornado left the ground. The lightning was concentrated just outside the storm core, the area of intense precipitation where radar echoes are strongest. This was in the left-front quadrant of the north-eastward-moving storm.

During the twister’s eight-
(Continued on p. 8)

Scientist Predicts Disruptions from “Super” Magnetic Storm

A super magnetic storm, causing unprecedented disruptions in earth’s power transmissions, will probably strike in the next few years, according to a NOAA scientist.

Magnetic storms set-up currents in power lines that cause overloads and cut off power. Howard Sargent of the Space Environment Services Center believes power transmission systems are more vulnerable than ever to magnetic disturbances, and that conditions are ripe for a storm more powerful than any of these systems have weathered.

There is a class of “super” magnetic storms, he said that tends to occur after the peak in the sun’s 11-year sunspot cycle. They are especially likely, he noted, in odd-number-

ed, active cycles. The sun is now just past the peak of a particularly spotty cycle, Cycle 21.

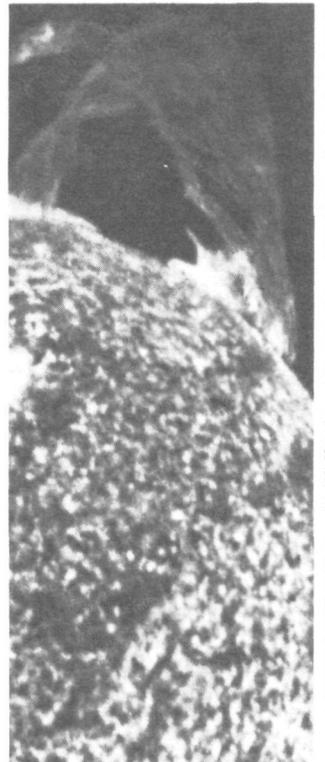
NOAA’s space center monitors and forecasts solar activity and the magnetic storms it can cause on earth. The most powerful episode of solar flares and magnetic storms it has detected during its 15 years of operation occurred in August, 1972. Then, there were numerous, but minor, power disruptions. Now evidence has shown that in the long-term, scientists could label these storms “weaklings.”

During powerful magnetic storms, the aurora, which usually clings to polar areas, reaches into temperate and even tropical skies. During the 1972 storms, the aurora was seen as far south as Ken-

tucky. In the past, it has reached almost to the equator.

Instruments that monitor the intensity of the earth’s magnetic field tell a similar tale. On an index where a “major” storm rates 100, the 1972 storm reached 220. But over the past century, there were a total of 17 storms — what Sargent calls “super storms” — that registered over 350.

Even if there are no super storms, a lesser storm could do more damage now than in 1972, Sargent has concluded. Since then, our power systems have become more fragile, with longer lines and interconnections similar to the old-fashioned Christmas tree lights; if one section fails, the whole string blacks out.



NOAA Suggestion Awards

Employees who had suggestions accepted for adoption during the months of October through March 1980 include:

Name	Amount	Suggestion Number	Title
Abbot, Brent & Ferguson, Wade P. NOS	\$45.00 ea.	1891	Blanket Cleaner
Allred, Bernard G. NMFS, St. Petersburg, Florida	100.00		"Change in Method of Reporting on Quarterly Energy Consumption"
Andree, Eleanor Headquarters, NOS	50.00	1629	Multiple Copies of Form CD-78 (NCR)
Arnold, Don NWS-WRH, Salt Lake City, Utah	75.00		Annex Parking Lot Hazard
Barton, Bruce WSMO, Neenah, Wisc.	25.00	3-2384	Guide to Radar Watch
Blackwood, Clyde & Thorsen, Bernard W. NWS-ER, Garden City, New York	25.00 ea.	80-12	Locating the AMOS-MED
Boa, John J. Headquarters, NESS	75.00	1926	History File Maintenance
Boyce, Daron E. NWS-ER, Garden City, New York	25.00	9-068	Automatic Telephone Savings
Dye, Scott S. NWS-ER, Garden City, New York	100.00	9-050	Inclusion of NWR Transmitters on Road Maps
Gable, James & Perry, Richard, ERL/PMEL, Boulder, Colo.	25.00 ea.	R904-260	Property Identification
Gentry, Kenneth E. CLSC, Kansas City, Mo.	100.00	3-2344	Warehouse Location Form

(Continued on p. 7)

CURRENT NOAA VACANCIES

Announcement Number	Position Title	Grade	Organization	Location	Issue Date	Closing Date
NOS-80-68-DH	Distribution Officer	GS-15	NOS	Riverdale, Md.	5/23	6/16
NOS-80-63-DH	Supervisory Civil Engineer	GS-15	NOS	Rockville, Md.	5/13	6/4
ER-80-32-SB	Supervisory Meteorologist	GS-14	NWS	Pittsburgh, Pa.	5/19	6/3
NMFS-80-92-PM	Industry & Marketing Services Adm.	GS-13/14	NMFS	Washington, D.C.	5/21	6/12
SER-80-33-MR	Fishery Biologist	GS-13	NMFS	Miami, Fla.	5/23	6/9
HOS-80-78-AM	Supervisory Personnel Management Specialist	GS-13	NWS/NESS	Suitland, Md.	5/23	6/16
ERL-80-139-VP	Physical Scientist	GS-13 Promotion Potential GS-14	ERL	Boulder, Colo.	5/19	6/14
NOS-80-62-NB	Oceanographer	GS-14	NOS	Rockville, Md.	5/13	6/4
PR-80-6-FJK	Meteorologist	GS-13	NWS	Honolulu, Hawaii	5/21	6/5
ERL-80-134-VP	Supervisory Meteorologist or Supervisory Physical Scientist	GS-13	ERL	Research Triangle Park, N.C.	5/19	6/14
SER-80-31-RH	Computer Specialist	GS-12	NMFS	Charleston, S.C.	5/23	6/16
NWS-80-94-GZJ	Electronics Engineer	GS-12	NWS	Silver Spring, Md.	5/21	6/12
NESS-80-28-VLM	Meteorologist	GS-12/13	NESS	Anchorage, Alaska	5/19	6/3
SER-80-32-MR	Fishery Biologist	GS-12	NMFS	Miami, Fla.	5/23	6/9
WR-80-62-DD	Meteorologist	GS-12	NWS	Portland, Oregon	5/21	6/5

NOTES ABOUT PEOPLE

Spinelli Heads Utilization Research Unit

John Spinelli became, Mar. 1, 1980, Director of the Utilization Research Division of the Northwest and Alaska Fisheries Center, National Marine Fisheries Service. He succeeded Dr. Maynard Steinberg who retired on August 31, 1979.

Born in Seattle, Spinelli obtained his B.S. degree in 1949 at the University of Washington. Starting his career as a chemist, Spinelli worked on projects ranging from food preservation techniques to the isolation of basic chemical compounds from natural products.

In 1962, Spinelli was appointed to the research staff of the Technological Laboratory, formerly of the Bureau of Commercial Fisheries.

Spinelli's research at the Laboratory had been focused on the biochemical changes that occur in fishery products during processing and storage. He also was program leader for the Division's aquaculture program which was primarily oriented toward the characterization and potential use of feed sources for salmonid diets. The work has led to the inclusion of under-

(Continued on p. 7)

Article Brings Authors Honor

Dr. Donald C. Malins, Director, of the Environmental Conservation Division, Northwest and Alaska Fisheries Center Seattle, Washington, and Professor H. K. Mangold, Director, Institute fur Biochemie und Technologie, H. P. Kaufmann-Institut Munster, FRG, were honored in a recent issue of CURRENT CONTENTS, Institute for Scientific Information,

(Continued on p. 7)



The Plan Review Program, National Marine Fisheries Service, received a unit citation for sustained, high-level performance that enabled the NMFS to meet its responsibilities under the FCMA.

Terry Leitzell (standing second from left), Assistant Administrator for Fisheries, presented the awards to: (seated, l-r) Andrew Vrooman, Robert Siegel, Norma Loeffel, and Austin Magill, (standing l-r) Mary Thompson, Roland Finch, James McCallum (honorary recipient on IPA assignment from the University of Washington), Richard Stone, Donald Leedy, George Rees, and Aven Anderson. Not present, but receiving certificates, are Becky Vasvary, Clem Brittzer, and Roger Hutchinson.

NOAA Suggestion Awards

(Continued from p. 6)

Name	Amount	Suggestion Number	Title
Gibson, Angela A. Headquarters, NOS	125.00	1963	Redistribution of Workload & Eliminating Overtime
Gilliam, Cynthia A. WSFO, Indianapolis, Indiana	25.00	3-2387	Distribution of Satellite Pictures
Green, Mitchell & Rodrigues, Santos NESS, Headquarters	20.00	1932	Data General Cassette I/O Board Interchangeability Modification
Greenberg, Abraham	50.00	8-061	Precipitable Water Forecasts 101XX
Hays, Brooke E.	50.00	NEFC 79-8	Redecorate Mailroom
Hunt, Martin	100.00	1831	Enlarging Route Charts
Hunt, Martin	245.00	1915	Updating Water System
Kays, Steve D. WSFO, Topeka, Kansas	200.00	3-2386	Modification of NMC Chart "Four panel Composite moisture Chart."
Kilgore, Eugene NWS-ER, Garden City, New York	25.00	8-096	AFOS Screens
Kirkendoll, Raymond E. NSSFC, Kansas City, Missouri	50.00	3-2369	Mylar Perforated Tape
Ladany, Catherine Finance, Headquarters	45.00	1894	"Deposit Stamp"
Lanning, Bobby NOS, Headquarters	25.00	1876	Wax Cutter
Marshak, Bruce S.	Letter of Commendation	2-2021	ADM Maintenance
McGlistter, John D. NESS, Headquarters	140.00	1914	Shielded Computer Extender Board
Norton, James H. NESS, Headquarters	265.00	1756	Installation of Teletype Idle Line Motor Controllers

(To be continued next issue)

Spinelli Heads Utilization Research Unit

(Continued from p. 6)

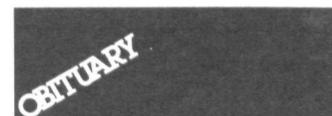
utilized crustacea (pelagic red crab) and crustacean wastes as protein and carotenoid sources in salmonid diets.

Spinelli has authored/co-authored over 50 research papers that have appeared in U.S. and foreign scientific journals and he has been granted two Public Service patents. He is a member of the American Chemical Society, Institute of Food Technology, American Association for the Advancement of Science, the New York Academy of Science, and the Association for the Advancement of Science.

Article Brings Authors Honor

(Continued from p. 6)

Vol. 23, No. 15, April 14, 1980, for a paper they published twenty years ago in the JOURNAL OF THE AMERICAN OIL CHEMICAL SOCIETY 37-576-8 1960. The paper was cited 275 times since 1961. The average article published in a journal covered by SCI in 1973 received 5.7 citations (1973-76). Dr. Malins wrote a commentary in CURRENT CONTENTS emphasizing the human side of the research which resulted in a fundamental advance in the analysis of lipids (fats) present in complex natural and synthetic mixtures.



Harold P. Cochran

Harold P. Cochran, a weather service radar specialist in Evansville, Indiana, died May 1. He leaves his wife Mary and son Steven. Their home is 505 Colonial Ave., Evansville, Indiana 47710.

FROM THE GALLEY

POACHED HADDOCK WITH MUSSELS

- 2 pounds haddock, cod or other thick fillets, fresh or frozen
- 4 pounds mussels in shells (about 4 dozen)*
- 1 cup dry white wine
- 1 cup water
- 1 small onion, sliced
- 1/2 teaspoon salt
- 1/2 cup whipping cream
- 1/4 cup margarine or butter
- Dash white pepper



- Dash nutmeg
- 2 tablespoons chopped parsley
- Parslied potatoes
- 1 cup each of zucchini, carrots and celery, cut julienne style
- Margarine or butter for cooking vegetables

Thaw fillets if frozen. Cut into serving-size portions. Clean mussels in cold water. Scrub shells with a stiff brush, rinsing thoroughly several times. Combine wine, water, and onion in large pan; bring to simmering stage. Add cleaned mussels. Cover and steam about 5 minutes or until shells open. Remove mussels from shells; set aside. Strain cooking liquid into a large skillet. Add fillets and salt. Cover and simmer 8 to 10 minutes or until fish flakes easily when tested with a fork. Transfer fillets to warm platter; keep warm. Reduce cooking liquid to 1/2 cup. Stir in whipping cream, 1/4 cup margarine or butter, pepper and nutmeg; simmer until sauce thickens slightly. Add mussels and parsley; heat. Spoon mixture over fillets. Serve with parslied potatoes and julienne strips of zucchini, carrot, and celery sauteed in margarine or butter, stirring constantly just until tender. Makes 6 servings.

NOAA news

Published biweekly at Rockville, Md., by the National Oceanic and Atmospheric Administration, **Richard A. Frank**, Administrator; produced by the NOAA Office of Public Affairs, **Albert Mark**, Director; **Philip P. McGeoghan**, **Robert L. Buchanan** and **Charles G. Thomas**, Editorial Board; **Brenda A. Diggs**, Production Assistant.

The publication provides information for employees of NOAA, an agency of the U.S. Department of Commerce.

Articles for publication should be submitted at least ten work days in advance to NOAA News, NOAA Office of Public Affairs, Room 108, Rock-Wall Building, Rockville, Md. 20852.

NOAA News reserves the right to make changes in submitted copy in conformity with the policies of the publication and of NOAA.

Maps of Lightning Strikes Aid Storm Studies

(Continued from p. 5)

minute rampage, it was situated right alongside the lightning and precipitation, all moving along at 45 miles per hour. Because of the continued movement of the storm, the surge in lightning activity that occurred about 20 minutes after the tornado's demise, took place roughly 12 miles northeast of its surface track.

"Only a few other studies of storm flash rate have been made," says Maier. We found that the cloud-to-ground flash rate of the Lawton storm is about the same as that for typical

Florida thunderstorms. We suspect that the big difference is that tornado-producing storms have much more cloud-to-cloud lightning."

The Lawton storm's lightning activity was mapped from two direction-finding sites, one at Norman, Okla., and the other northwest of Norman, near El Reno. At each site, a direction-sensitive antenna homed in on the magnetic field radiated by the ground strokes. The location of each flash was determined by the point of crossing of the two bearings.



NWS Tour—During a visit to the NWS Eastern Region, headquarters, **Richard A. Frank**, NOAA Administrator, center, meets informally with **William Bonner**, NWS deputy director, **Walt Siebert**, far right, NWS chief, Meteorological Services Division, Eastern region, **Roz Ebenholtz**, left, secretary to Region Director, and **Richard Angulis**, acting director of the Eastern Region. During question and answer period, after Frank's meeting with division chiefs and their staffs, Frank responds to queries on outside contracting, hiring policies and the status on the "regionalization" study.

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

NOAA CENTRAL DISTRIBUTION UNIT (MB/A 0354)
12227 Wilkins Avenue
Rockville, Maryland 20852

THIRD-CLASS MAIL
POSTAGE & FEES PAID
NOAA
PERMIT NO. G-19

OFFICIAL BUSINESS

National Oceanic and Atmospheric Administration

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages

Faded or light ink

Binding intrudes into the text

This has been a co-operative project between the NOAA Central Library and the Climate Database Modernization Program, National Climate Data Center (NCDC). To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x124 or Library.Reference@noaa.gov

HOV Services
Imaging Contractor
12200 Kiln Court
Beltsville, MD 20704-1387
July 23, 2010