

# Earthquake Prediction Goal of NGS

A massive, 2,500 mile survey in Southern California to probe crustal motion over the San Andreas and Garlock faults will begin next month, conducted by National Ocean Survey's National Geodetic Survey (NGS) and the U.S. Geological Survey (USGS).

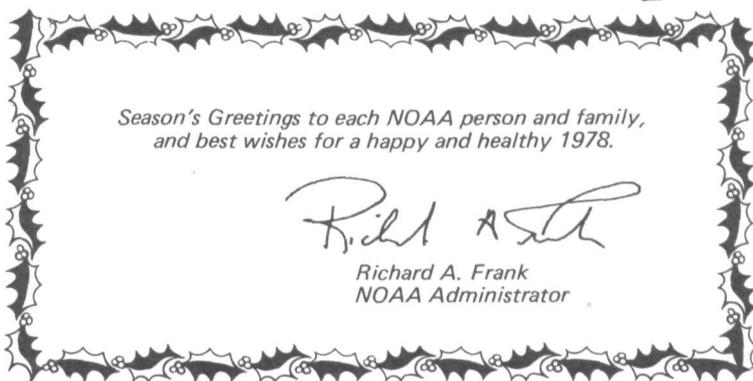
According to Dr. Muneendra Kumar, Project Manager from NGS, the results obtained from this project should help the U.S. Geological Survey in fulfilling its goal of developing an earthquake prediction capability.

"If the scientific community can achieve a reliable method of predicting an earthquake," he said, "such a capability will have immense impact on the stability, growth, and development of Southern California in particular and other parts of the world in general."

The three-month, \$1.5 million, multiagency project will involve 18 leveling and five gravity teams from NGS and the USGS. In addition, 18 leveling

(Continued on p. 2)

# Three Named to Top NOAA Posts



Three appointments to top-level positions at NOAA were announced this week by the NOAA Administrator, Richard A. Frank.

William C. Brewer, Jr., who has served since 1974 as NOAA General Counsel, will become Special Representative of the Secretary of Commerce to the Law of the Sea Conference and Special Representative of the NOAA Administrator on Law of the Sea and International Law.

Eldon Van Cleef Greenberg, presently Deputy General Counsel of the Agency for International Development, will become General Counsel of NOAA.

Samuel A. Bleicher, who has been Acting Assistant Administrator for Policy and Planning, will become Director of the newly created Office of Ocean Management.

Brewer and Greenberg live in Washington, D.C., while Bleicher is a resident of Toledo, Ohio.

Brewer was a partner in the Boston law firm of Hill and Barlow before his appointment as General Counsel of NOAA in 1974.

He was graduated from Phillips Academy in 1939, Williams College in 1943, and from Harvard Law School in 1949 when he became General Counsel of the Mutual Boiler and Machinery Insurance Company. In 1953 he became a partner in the law firm of Peabody, Koufman and Brewer, which was succeeded by the firm of Hill and Barlow in 1965.

Brewer has served as adjunct professor at Boston College Law School, teaching coastal zone management and international business law. He has been a director of several companies, and has written numerous articles for legal journals.

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# NOAA Computers Show How Ice Age Changed Tropics

Computer experiments by Dr. Syukuro Manabe and colleagues at NOAA's Geophysical Fluid Dynamics Laboratory in Princeton, N.J., show the last ice age resulted in sand dunes and desert claiming tropical continents. They also indicate the ice age could have been caused by a change in the earth's orbit.

In one experiment, Manabe and Douglas Hahn, another scientist with ERL, used an advanced computer model of the atmosphere to recreate conditions during the last ice age, 18,000 years ago.

According to the model, both the rate of evaporation and of rainfall during the ice age summer were smaller than today. However, the difference in climate was not uniform: the tropical oceans received more rain, while the tropical continents were more arid during the ice age.

The aridity of tropical continents, Manabe said, is corroborated by geologists, who have found evidence that during the last ice age the Sahara extended much farther toward the

(Continued on p. 2)

# Porpoise Mortality To Be Lower

The number of porpoises that may be killed by U.S. tuna fishermen incidental to their fishing operations has been set at 51,945 in 1978, 41,610 in 1979, and 31,150 in 1980 under regulations published by the National Marine Fisheries Service.

Other major changes to present regulations, issued under the Marine Mammal

(Continued on p. 2)



Ah, those hardy NOAA Corps helicopter pilots! (Left to right) Lt. Terry M. Laydon, Lt. Edward B. Christman (with pole), and Lt. William J. Harrigan take in the sun along the ice edge in the Bering Sea during a break in their scheduled field operations aboard the NOAA Ship Surveyor.

## Fish Meal and Fish Oil Supplies Decline in Trade

Supplies of fish meal and fish oil in domestic and international trade declined during the first half of 1977 from a year earlier, while the supplies of fish solubles increased, according to National Marine **Tuna** (From p. 1)

Protection Act of 1972, require the yellowfin purse seine fishermen to install a porpoise apron system—a chute-like area in the back of the nets designed to permit porpoises to escape—in 1978.

Additionally, certificates of inclusion, under permits to engage in yellowfin purse seine fishing operations on porpoise, will be issued to both the vessels, through the vessel owners, and vessel operators rather than the vessel operators only, as is the current practice.

Rules have been established to allow amendments to the regulations and permits through informal rule-making during the three-year period, rather than using a formal hearing by an Administrative Law Judge each year, unless major changes are proposed. In this event, a formal hearing may be required.

The new regulations, effective January 1, 1978, are expected to achieve a 50 percent reduction in porpoise mortality by 1980 from the 1977 quota of 62,429. As of mid-November, approximately 24,500 porpoise had been killed in the fishery this year.

### OBITUARY

#### Mrs. Sharlene Rafter

Mrs Sharlene Rafter, retired librarian with the Library and Information Services Division of EDS' Environmental Science Information Center, died Nov. 17. She came to the library of the Coast and Geodetic Survey in the spring of 1964 and worked on the move from the Commerce building to Rockville. She spent 12 years in the Marine and Earth Sciences Library, and retired after 26 years as a government librarian, in July 1976.

Fisheries Service.

Fish meal and fish solubles are nutritionally important ingredients in some manufactured animal feeds, especially feed for poultry and farmed fish, trout and catfish. In the United States, fish oils are used as ingredients only in inedible products, like paints, varnishes, resins, plastics, and lubricants.

Fish meal, oil, and solubles are produced from many species of fish— including menhaden, anchovy, herring, pilchard, and capelin—most of which are not eaten by humans.

The reduction in both U.S. imports and exports of fish meal and fish oil indicates tighter domestic and international supply situations. While the United States is a net importer of fish meal, it is a net exporter of fish oil.

In the first half of 1977, U.S. fish oil exports were at the lowest level since 1968.

#### Ice Age (From p. 1)

Equator, with sand dunes covering the northern portions of tropical Africa, where grassy savannah now reigns.

But what caused the ice ages? There are now many theories about the causes, according to Manabe. An ice age may occur as a manifestation of a long-term fluctuation of climate, part of an interactive oscillation, he explained. Another theory is that ice ages were caused by changes such as the tilt of the earth's axis of rotation and the eccentricity of the earth's orbit.

The orbital theory has been tested by feeding many sets of past orbital parameters—which can be precisely calculated—into a highly simplified mathematical model of the ocean-atmosphere system.

There were some discrepancies between the results from the model and from the geological record. But on the whole, the scientists believe, a substantial portion of a climatic variability on the time scales they studied can be attributed to the atmosphere's response to disturbances in the earth's orbit.

## Earthquake Prediction (From p. 1)

teams will be provided by Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties, Los Angeles City, the Los Angeles Water and Power Department, and the Metropolitan Water District of Southern California in this cooperative effort.

The survey will extend from Avila Beach in the west to Blythe in the east, and from Goldstone in the north to San Diego in the south. It will be used to establish an instantaneous datum for Southern California and to determine the extent and nature of crustal movements in the area.

Survey parties from the National Geodetic Survey are presently in the project area setting new bench marks and recovering old ones. Accurately scaled positions, in latitude and longitude, with descriptive locations, are being fed into NOAA's computer for use at the time of the actual survey.

Related studies conducted during the survey will deal with

ocean "tilts": observations made by oceanographers and geodesists that the sea surface is not horizontal, but is on a slope. Measurements made by scientists from the two specialties do not agree, and data from the survey project will be used in an attempt to determine why.

### BEST FISH BUYS

According to the NMFS National Fishery Education Center in Chicago, the best fish buys for the next week or so are likely to be fresh hake and haddock fillets along the Northeast Seaboard; frozen cod fillets and fresh whole flounder in the Middle Atlantic States, including the D.C. area; fresh whole perch and frozen cod fillets in the Southeast and along the Gulf Coast; frozen smelt and canned pink salmon in the Midwest; fresh Dungeness crab and fresh cod fillets in the Northwest; and fresh Pacific oysters and frozen dressed whiting in the Southwest.

## Three Appointed

(From p. 1)

Greenberg was graduated Magna Cum Laude from Harvard College in 1965 with a Bachelor of Arts degree. After postgraduate studies at the Institut de'Etudes Politiques de Paris in France from 1965 to 1966, he took his J.D. degree Cum Laude from Harvard Law School in 1969.

From 1969 to 1970 he was law clerk to Edward C. McLean, U.S. District Judge for the Southern District of New York, and for the next two years was associate attorney at Debevoise, Plimpton, Lyons and Gates of New York. He was staff attorney at the Center for Law and Social Policy in Washington, D.C. from 1972 to 1977 when he became Deputy General Counsel at the Agency for International Development.

The author of several articles appearing in legal journals, Greenberg has served as adjunct professor in administrative law at Georgetown University Law Center. He was Advisor to the United States Delegation to the

Law of the Sea Conference from 1975 to 1977.

Bleicher was graduated from Northwestern University in 1963, Phi Beta Kappa, with Honors in Economics, and received his J.D. degree from Harvard Law School in 1966. He is a law professor at the University of Toledo College of Law, with emphasis on environmental, constitutional, and international law. From 1972 to 1975, Bleicher served with the Ohio Environmental Protection Agency, first as Deputy Director for Regulation and then as Deputy Director for Regulation and Enforcement. In 1976 and 1977 he served as Issues Analyst for the Carter-Mondale Presidential Campaign and Carter-Mondale Transition Team.

He joined NOAA as Special Assistant to the Administrator with responsibilities for reorganization, policy planning, and executive recruitment in February 1977.

## Cloud Modification Programs

### ERL Briefs in Mexico City

Projects STORMFURY and FACE, the hurricane and cumulus cloud modification programs conducted by the ERL Weather Modification Program Office's National Hurricane and Experimental Meteorology Laboratory (NHEML), were discussed with Mexican officials on November 14 and 15. Talks were given by Drs. Wilmot Hess (ERL), Stanley L. Rosenthal, Robert C. Sheets, Robert I. Sax, and Robert W. Burpee (NHEML) and Noel E. LaSeur (Florida State University). The Mexico

City meetings were called to discuss possible cooperative research, especially the seeding of tropical storms in the eastern Pacific.

About 100 persons from Mexican government meteorological and hydrological departments, the military, and universities were present. Many joined the tours and demonstration flights that were conducted aboard the NOAA P-3 by the Research Facilities Center crew and technicians and the NHEML scientists.

## MARMAP

### Fish Eggs Subject of Class

Izadore Barrett, director of NMFS's Southwest Fisheries Center, recently reported the completion of a training course on identification of fish eggs and larvae conducted at the Center's La Jolla (Calif.) Laboratory.

For the sixth year, Senior Scientist Dr. Elbert H. Ahlstrom, assisted by Dr. H. G. Moser, presented an intensive course designed to prepare scientists for making biomass estimates of the fish resources of a given area. During the four-week course, 220 life history series were studied, representing about 100 marine fish families.

Called MARMAP, the classes have been presented by Dr. Ahlstrom to more than 110 persons, including scientists from about 25 foreign countries.

This year's participants came from NMFS laboratories at Sandy Hook, N.J., and Beaufort, N.C., and from laboratories in India, Nigeria, Mexico, Chile, New Zealand, and seven U.S. universities.

LISD also will have access to the public Bibliographic Citation File, references to significant current periodical articles, pamphlets, GPO publi-

## EDS' SCORPIO System Gains Congressional File Access

The Library and Information Services Division (LISD) of EDS' Environmental Science Information Center will be one of the first Federal libraries to gain on-line access to a special group of Congressional files in January. The files are part of the SCORPIO system (Subject-Content-Oriented-Retriever for Processing Information On-line), developed by the Library of Congress to meet special information needs of members of Congress, their staffs, and the public.

The files that LISD will be able to search for NOAA managers and scientists include three legislative information files, the *Bill Digests* for the 95th, 94th, and 93rd Congresses. Each of these separate files contains information on public general bills, amendments, and resolutions introduced during that Congressional session.

Also available, more efficiently with SCORPIC, is the National Referral Center file, which LISD currently accesses through another source. This file directs the user to organizations willing to provide information on science and technology topics. More than 10,000 organizations are covered.

For more information on the SCORPIO system, call LISD on 443-8330.

The computerized Library of Congress Catalog can also be searched on-line with the availability of the new system. This file covers over 725,000 items catalogued by the Library of Congress since 1969.

Participants, U.N. documents, and special interest publications. This file is created by the Congressional Research Service Library Services Division and will permit LISD to compile selective bibliographies on topics that the Congressional Research Service considers high-interest or vitally important issues.

Participants at the recent MARMAP training course at NMFS's Southwest Fisheries Center, La Jolla, Calif., from left to right: (Front row) Leanne K. Legacie, Univ. of Wash.; Liz Clarke, Univ. of Alaska; Elaine Sandknop, NMFS, La Jolla; Lalithambika Devi, India; Doris Finan, NMFS, Sandy Hook; Susan D'Vincent, NMFS, La Jolla; Maarta Garretan, Chile; Pat Wagner, Univ. of Alaska; John Tucker, N.C. State Univ.; Olayinka Babalola, Nigeria; Elizabeth Stevens, NMFS, La Jolla; Cesar Flores Coto, Mexico. (Back row) Allyn B. Powell, NMFS, Beaufort; John E. Olney, VIMS; Dr. Bruce Miller, Univ. of Wash.; T. Saunders English, Univ. of Wash.; Bob Behrstock, Humboldt State Univ.; F. Douglas Martin, Univ. of Md.; Francois Conand, New Caledonia; Bruce Stewart, Moss Landing Marine Lab.; Dr. E. H. Ahlstrom and Dr. H. G. Moser, NMFS, instructors.



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## NOAA NEWS

Published biweekly at Rockville, Md., by the Office of Public Affairs for the information of employees of the Commerce Department's National Oceanic and Atmospheric Administration.

Articles to be considered for publication should be submitted at least 10 days in advance to NOAA News, Room 221, WSC5, Office of Public Affairs, National Oceanic and Atmospheric Administration, Rockville, Md., 20852.

NOAA News reserves the right to make corrections, changes or deletions in submitted copy in conformity with the policies of the paper or the Administration.

Nancy Pridgeon, Editor  
Warren W. Buck, Jr., Art Director

# Your Holidays Will Sparkle . . .



SEAFOOD HOLIDAY TREE

Select a styrofoam tree, 18 to 24 inches tall. String fresh cranberries on lengths of heavy white thread, 6 or 8 inches longer than needed to go around tree at various levels. Strings of cranberries go between each row of food. To get width between each row of cranberries measure the appropriate width of each appetizer being attached to tree and add  $\frac{1}{4}$  inch.

Pin all rows of cranberries onto tree allowing space for appetizers between rows, securing each cranberry with a long pin. Place cluster of tiny red satin or other unbreakable balls for decoration at top of tree. Attach appetizers to tree using colored plastic picks. The rows of foods shown on the tree, starting at the top, and alternating with cranberry rows are:

Tuna Nuggets; carrot flowers; king crab or lobster tail slices; cooked shrimp with green pepper; stuffed olives; another shrimp with green pepper; Tuna Nuggets; shrimp with stuffed olives; and fresh cauliflowerettes. Stand tree on serving platter and garnish base with crab fingers and Tuna Tomato Teasers on cucumber slices. Foods shown on tray are fresh oysters in white shells and Seafood Snacks. Offer complementary dips of avocado, sour cream, or cocktail sauce.

## SEAFOOD SNACKS

Cut fancy shapes (stars, diamonds, circles, etc.) from thinly sliced white, whole wheat, or rye bread. Spread with cream cheese or a favorite cheese spread and top with rolled smoked salmon, whitefish or salmon caviar, Maine sardines, pickled herring, cooked lobster tail, or king crab. Garnish with additional cream cheese put through a pastry tube and bits of pimiento, green pepper, or stuffed olives.

## TUNA NUGGETS

- |   |  |
|---|--|
| 2 cans (6 $\frac{1}{2}$ or 7 ounces each) tuna    | 2 teaspoons horseradish                        |
| 2 packages (3 ounces each) cream cheese, softened | $\frac{1}{4}$ teaspoon liquid hot pepper sauce |
| 1 tablespoon lemon juice                          | 1 cup chopped parsley                          |

Drain and flake tuna. Cream the cheese. Add seasonings and tuna; mix thoroughly. Portion tuna mixture with a tablespoon. Shape into small balls. Roll in parsley; chill. Makes approximately 40 hors d'oeuvres.

## TUNA TOMATO TEASERS

- |   |  |
|---|--|
| 1 can (6 $\frac{1}{2}$ or 7 ounces) tuna    | $\frac{1}{2}$ teaspoon salt                    |
| 1 package (3 ounces) cream cheese, softened | $\frac{1}{2}$ teaspoon liquid hot pepper sauce |
| 1 ripe avocado, mashed                      | $\frac{1}{2}$ teaspoon Worcestershire sauce    |
| 1 tablespoon lemon juice                    | 2 pints cherry tomatoes                        |
| 1 teaspoon chili powder                     |  |

Drain and flake tuna. Cream the cheese and avocado. Add seasonings and tuna; mix thoroughly. Chill. Wash tomatoes and hollow out centers. Turn upside down to drain. Fill each tomato with a heaping teaspoonful of tuna mixture. Makes approximately 40 hors d'oeuvres.

## NOR'EAST NIBBLES

- |  |                                  |
|--|----------------------------------|
| 8 frozen fried fish sticks               | 1 tablespoon butter or margarine |
| $\frac{1}{4}$ cup grated Parmesan cheese | Sea Sauce (recipe follows)       |

Cut frozen fish sticks into thirds. Roll each piece in cheese. Melt butter in a shallow baking pan, 15 by 10 by 1 inch. Place fish in pan. Bake in a very hot oven, 450 degrees F., for 8 to 10 minutes. Turn carefully. Bake 8 to 10 minutes longer or until crisp and brown. Drain on absorbent paper. Serve with hot Sea Sauce. Makes 24 hors d'oeuvres.

## NOR'WEST NIBBLES

- |   |   |
|---|---|
| 8 frozen fried fish sticks              | Sliced stuffed olives                     |
| 2 tablespoons butter or margarine       | or  |
| $\frac{1}{4}$ cup grated Cheddar cheese | Pimiento stars or diamonds for garnishing |

Cut frozen fish sticks into thirds. Melt butter or margarine in a baking pan, 15 by 10 by 1 inch, in very hot oven, 450 degrees F. Place fish in pan; turn carefully to coat with butter or margarine. Bake in oven 8 to 10 minutes or until crisp and brown; turn carefully, bake 6 to 8 minutes longer or until crisp and brown. Sprinkle tops with Cheddar cheese; return to oven until cheese melts. Top each nibble with a slice of stuffed olive or a pimiento star or diamond. Serve with hot Sea Sauce. Makes 24 hors d'oeuvres.

## SEA SAUCE

- |  |
|--|
| 1 can (8 ounces) tomato sauce                  |
| $\frac{1}{4}$ cup chili sauce                  |
| $\frac{1}{4}$ teaspoon garlic powder           |
| $\frac{1}{4}$ teaspoon oregano                 |
| $\frac{1}{4}$ teaspoon liquid hot pepper sauce |
| $\frac{1}{4}$ teaspoon thyme                   |
| $\frac{1}{8}$ teaspoon sugar                   |
| Dash basil                                     |

Combine all ingredients. Simmer 10 to 12 minutes, stirring occasionally. Makes approximately 1 cup sauce.



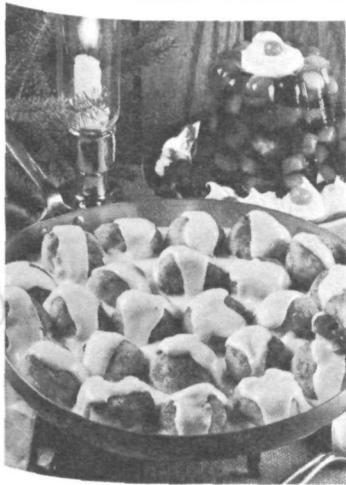
# With Tempting Treats From The Sea

## PARTY OYSTER ROLL

- |   |                                     |
|---|-------------------------------------|
| 1 can (3 ounces) smoked oysters                     | Salt and pepper to taste            |
| 1 package (8 ounces) cream cheese, room temperature | Milk, as needed for consistency     |
| 2 tablespoons mayonnaise or salad dressing          | ½ cup nuts, chopped fine            |
| 1/2 teaspoon garlic powder                          | Dehydrated or frozen chopped chives |
|   | Assorted crackers                   |

Drain oysters; chop fine and set aside. Combine and mix cheese, mayonnaise and garlic powder. Add salt and pepper to taste. Add milk if needed for consistency. Spread cheese mixture evenly about 1/8 inch thick and into an 8 by 10 inch rectangle on a sheet of heavy waxed paper. Combine chopped oysters and nuts; mix well. Sprinkle evenly over cheese and roll up jelly-roll fashion peeling waxed paper off as you go or as you roll up. Sprinkle chives evenly over a clean sheet of waxed paper and roll until cheese is completely coated. Wrap in waxed paper. Refrigerate overnight or until firm. Serve with assorted crackers. Makes 30 to 36 appetizer servings.

## FISH BALLS WITH HORSERADISH-MUSTARD SAUCE



### FISH BALLS

- 1 pound cod or other fish fillets, fresh or frozen\*
- 1 ½ cups soft bread crumbs
- 2 eggs
- 1/3 cup finely chopped onion
- 1/3 cup finely chopped celery
- 1 tablespoon lemon juice
- ½ teaspoon salt
- 1/8 teaspoon pepper
- 2 tablespoons margarine or cooking oil
- Horseradish-Mustard Sauce

Thaw frozen fish. Poach fish\*\* and drain well; cool and flake. Combine fish, crumbs, eggs, onion, celery, lemon juice, salt, and pepper; beat until well mixed. Chill well. Divide mixture into 16 equal portions (a heaping tablespoon for each). Shape mixture into balls. Mixture will be very soft. Chill until ready to cook. Heat margarine or cooking oil in frying pan. Add fish balls. Brown well on all sides, 8 to 10 minutes, turning carefully as needed to brown evenly. While balls are browning, prepare sauce. Pour hot sauce over fish balls. Serve hot. Makes 4 family-size servings; double or triple recipe as needed for guests.

\*One can (1 pound) salmon may be substituted for fish fillets, if desired. Drain, bone, and flake salmon.

\*\*To poach fish: Combine ½ cup water, 1 ½ teaspoons lemon juice, ½ teaspoon salt, and 1 small bay leaf in frying pan. Bring to a boil. Add fish; cover and simmer 6 to 10 minutes or just until fish flakes easily when tested with a fork.

### HORSERADISH-MUSTARD SAUCE

- |                                   |                               |
|-----------------------------------|-------------------------------|
| 2 tablespoons butter or margarine | ½ cup Half and Half           |
| 2 tablespoons flour               | 1 tablespoon prepared mustard |
| ½ teaspoon salt                   |                               |
| 1 cup milk                        |                               |

Melt butter or margarine; stir in flour and salt. Add milk and half and half. Cook, stirring constantly until thickened. Stir in horseradish and mustard. Makes 1 ½ cups sauce.

## CRABMEAT DIP

- |  |                               |
|--|-------------------------------|
| 1 pound fresh lump or other crabmeat or                | 2 tablespoons Worcester sauce |
| 2 cans (6 ½ ounces each) snow or other canned crabmeat | 2 tablespoons grated onion    |
| 1 package (8 ounces) cream cheese                      | 2 tablespoons catsup          |
| 3 tablespoons lemon juice                              | 1 teaspoon horseradish        |
| 3 tablespoons whipping cream                           | ½ teaspoon crushed red pepper |
|  | Assorted crackers or wafers   |

Thaw crabmeat, if frozen. Drain crabmeat and remove any remaining pieces of shell or cartilage; set aside. Soften cream cheese in top of double boiler over simmering water or in heavy saucepan over low heat. Stir in remaining ingredients except crabmeat and crackers. When hot, carefully fold in crabmeat being careful so crabmeat will not be broken into small pieces. Heat and serve hot on favorite crackers or wafers. Makes 35 to 40 appetizer servings.

## SHRIMP DIP

- |   |                                   |
|---|-----------------------------------|
| 1 pound cooked, peeled and deveined small shrimp, fresh or frozen | 10 green onions, minced           |
| 1 package (3 ounces) cream cheese, room temperature               | ¼ cup salad dressing              |
| Juice of one lemon  | Salt and pepper to taste          |
| 1 clove garlic, minced  | Worcestershire sauce, as desired  |
|   | Liquid hot pepper sauce           |
|   | Potato chips or assorted crackers |

Thaw shrimp if frozen. Chop. Combine and mix cream cheese, lemon juice and garlic. Beat until smooth. Add shrimp, onions, and mayonnaise or salad dressing as needed to give the mixture the consistency for dipping chips or crackers. Season as desired with salt and pepper, Worcestershire and hot pepper sauce. Serve with potato chips or assorted crackers. Makes about 3 ½ cups dip.



## Here's More Information on the New Summer Jobs Program

The 1978 edition of the Summer Jobs Announcement, No. 414, is scheduled to be issued January 4, 1978. Copies of the announcement may be obtained from the Personnel Operations Branch Employment Office, Federal Job Information Centers and Civil Service Commission Area Offices. In addition, most college placement offices will make copies available to students. Copies of the announcement will not be available before January 4.

The rosters of eligibles established under the 1977 Summer Employment have been terminated by the Civil Service Commission. Previous eligibles will not be able to renew their 1977 eligibility for the summer of 1978.

In the past, Group I covered all jobs in grades GS-1 through GS-4. In 1978, Group I will cover only clerical and administrative work at grades GS-1 through GS-4 such as clerk-typist, clerk-stenographer, and clerk-administrative aid. Appli-

cants interested in being considered for these kinds of jobs will be required to pass the Civil Service Commission's written test which measures verbal and clerical abilities. (This is not the same test that has been administered for summer jobs previously.)

Applicants who pass the test must file directly with Federal agencies for summer employment consideration. Typists and stenographers, who were not employed by the Federal government last summer, will be asked to furnish proof of proficiency when making application for a summer job. The Civil Service Commission will not maintain lists of names for referral to Federal summer jobs. The timetable for applying for jobs in Group I is as follows:

-Period for filing for the written test: January 4 through January 27.

-Test will be scheduled during the month of February.

-Period for filing with

Federal agencies: March 15 through May 1.

In 1978, Group II jobs are those in grades GS-1 through GS-4 involving subprofessional, technical, and nonclerical work. Examples are: aids and technicians in engineering, physical or biological sciences, computer operations, etc.

If an examination is deemed appropriate, each agency will administer its own in accordance with the qualification standards for the particular position and agencies will maintain their own registers of eligibles. Applicants must file directly with the Federal agencies where they wish to be considered for summer employment. The period during which applicants will file for Group II jobs varies by agency and will be listed in the announcement. In NOAA the closing date for receipt of Group II applications is April 15.

The Civil Service Commission has authorized agencies

to reemploy previous year's summer hires, without the necessity of a written test, in Groups I and II, if these individuals were hired from the 1976 or 1977 Summer Employment Examination rosters maintained by the Commission.

The application and selection procedures for jobs filled under Group III will be the same as in previous years. This group includes positions in grades GS-5 and above, involving professional, technical, or administrative work requiring at least a bachelor's degree or the equivalent in experience. No written test is required. Application is to be made directly with the Federal agency where employment is desired. In NOAA, applicants must send an application (Form SF-171) and CSC Form 226 to the appropriate NOAA personnel office by March 1.

Any questions on summer employment may be directed to the Employment Office on (301) 443-8233.

## NOAA Personnel Division Lists Current Vacancies

Announcement No.	Position Title	Grade	MLC	Location	Issue Date	Closing Date
138-78	Cartographer (2 positions)	GS-11	NOS	Silver Spring, Md.	12-12-77	12-27-77
139-78	Electronics Technician	GS-10	NWS	Key West, Fla.	12-12-77	12-27-77
140-78	Operations Research Analyst	GS-11	NMFS	Miami, Fla.	12-12-77	12-27-77
134-78	Program Analyst	GS-12	NWS	Silver Spring, Md.	12-13-77	12-28-77
141-78	Meteorologist (Lead Forecaster)	GS-12	NWS	Cheyenne, Wyo.	12-13-77	12-28-77
142-78	Meteorologist	GS-12	NWS	Silver Spring, Md.	12-13-77	12-28-77
144-78	Electronics Technician	GS-11	NWS	Enterprise, Ala.	12-13-77	12-28-77
147-78	Computer Equipment Analyst	GS-12	NWS	Silver Spring, Md.	12-13-77	12-28-77
143-78	Supervisory Management Analyst	GS-12	HDQS	Rockville, Md.	12-14-77	12-29-77
150-78	Survey Statistician	GS-12	NMFS	Washington, D.C.	12-14-77	12-29-77
157-78	Computer Programmer	GS-7	NWS	Suitland, Md.	12-19-77	1-4-78
158-78	Meteorological Technician (Weather Service Specialist)	GS-10	NWS	Allentown, Pa.	12-19-77	1-4-78
159-78	Meteorological Technician (Weather Service Specialist)	GS-10	NWS	Elkins, W.Va.	12-19-77	1-4-78
160-78	Supervisory Wildlife Biologist (Research)	GS-12	NMFS	Seattle, Wash.	12-19-77	1-4-78
161-78	Fishery Biologist (General)	GS-11/12/13	NMFS	Juneau, Alaska	12-19-77	1-4-78
115-78	Supervisory Meteorologist	GS-14	NWS	Silver Spring, Md.	12-13-77	1-5-78
146-78	Supervisory Hydrologist	GS-15	NWS	Silver Spring, Md.	12-13-77	1-5-78
162-78	Electronics Technician	GS-10	NWS	Charleston, W.Va.	12-20-77	1-5-78
163-78	Meteorologist (Regional Disaster Preparedness Meteorologist)	GS-13	NWS	Fort Worth, Tex.	12-20-77	1-5-78

## NOTES ABOUT PEOPLE

Lt. David C. Jarrett, NOS's Pacific Marine Center in Seattle, Wash., worked as a "loan executive" on this year's United Way campaign of the King County (Wash.) fund drive. During the 12-week drive, 58 companies lent 91 executives to help make the fund drive a success. Jarrett was sponsored by NOAA.

John Graff, Meteorologist-in-Charge, WSFO Minneapolis, has been appointed to the National Science Foundation's Advisory Committee on National Hazards Warning Systems. He will be serving as an operational representative of the National Weather Service.

Frederic J. Laney, a foreign training specialist in the office of the Assistant Administrator for Fisheries, has become the first NOAA employee to be

awarded the University of Virginia Certificate in Oceanic Education.

The award signifies completion of a comprehensive multidisciplinary study of the oceanic environment and carries with it a minor endorsement to teach oceanic studies at all levels in American schools.

Laney completed his curricula in graduate world ocean study recently, following participation in a semester-long seminar in "Law of the Sea" and studies in Sciences of the Sea. Previous studies included courses in Humanities and the Sea, Coastal Zone Planning and Development, and Oceanic Policy.

The oceanic education program is offered all NOAA employees through the University of Virginia in

concert with the Oceanic Educational Foundation. The program was instituted in 1973 by Daniel Bella, employee development specialist in NOAA's Career Development Branch.

At least 10 other NOAA employees are enrolled in the program at this time, according to Gilven M. Slonim, president of the Oceanic Educational Foundation, who teaches the courses.

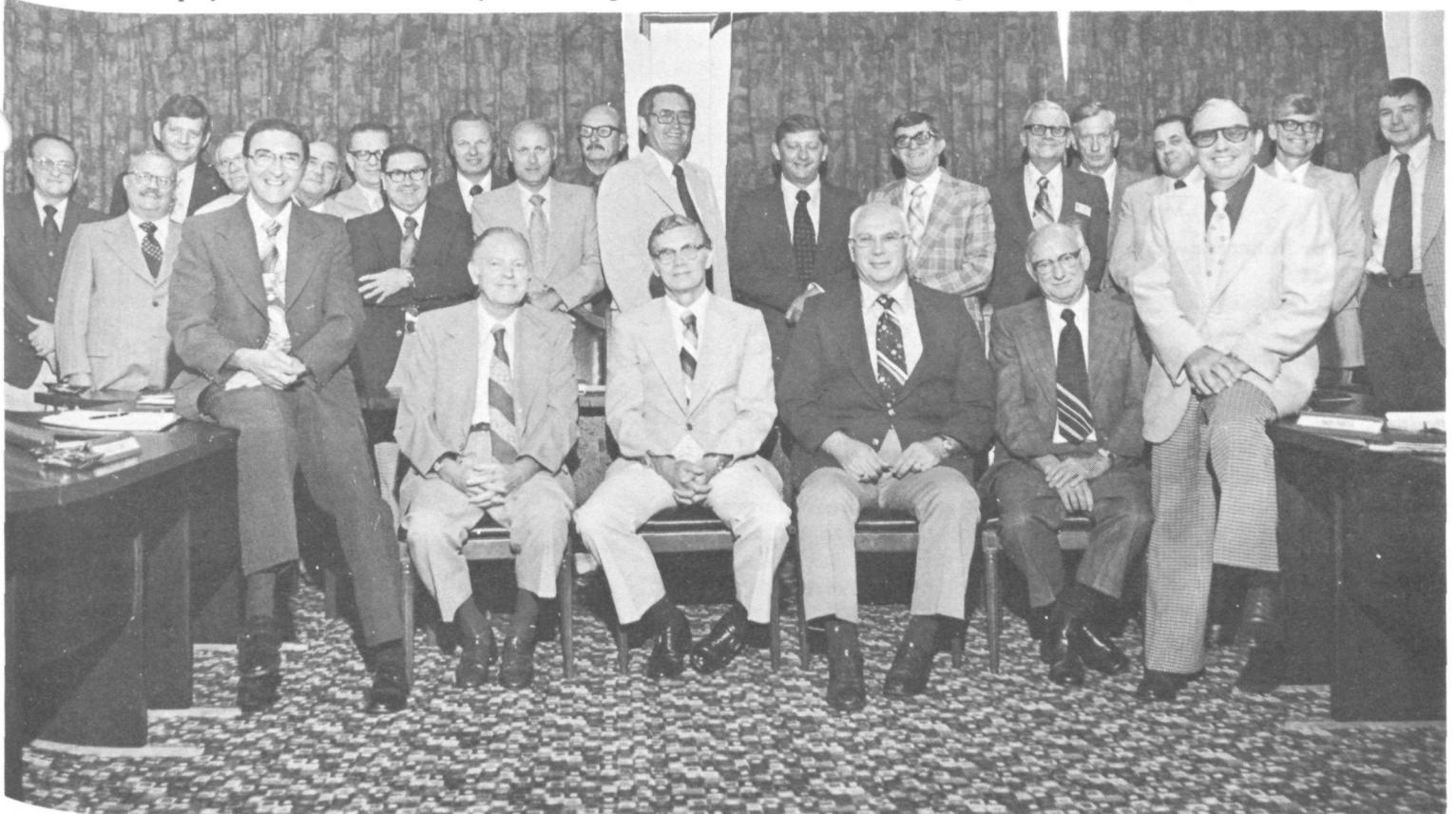
In addition to being an NWS Observation Branch Chief, Brigadier General Ralph T. Tice is the new commander of the 69th Infantry Brigade, Kansas National Guard. He took over the command in mid-July; and as a brigadier general, holds dual status of state rank as well as Federal. Approval for the post came from the U.S. Senate. His last assignment was

Chief of Staff and intelligence officer at State Headquarters.

A series of satellite images from NOAA's geostationary and polar orbiting satellites is featured in a new book, *Out of This World—American Space Photography*, just published by Dell Publishing Company.

In effect a photographic history of this nation's space activities as viewed from space, the book recounts the story of American space photography. Included are notes on equipment and film types used to take the scores of photographs—including 54 in full color—in the book, as well as instructions telling readers how to obtain their own space photographs.

The author Paul Dickson, acknowledges the assistance of Mrs. Mary F. Wyvill of NESS in the preparation of the book.



All 14 Meteorologists-in-Charge, the Hydrologist-in-Charge of the River Forecast Center, and the Director, National Severe Storms Forecast Center, attended the Central Region MIC conference held Aug. 31-Sept. 2 in Kansas City. (Seated left to right) Phil Calabrese, Chief, MSD; Charles Knudsen, Director, Central Region; Dr. George Cressman, Director, NWS; Bob Baskin, Deputy Director, Central Region; Bob Beebe, MIC, WSFO Cheyenne; Herman Mondschein, HIC, RFC, Kansas City, Mo. (Standing left to right) Phil Shideler, MIC, WSFO, Topeka; Ted Jafferis, Regional Aviation Meteorologist; Don Whitman, Chief, DATAC; Warren Caldwell, MIC, WSFO Des Moines; Jim Zoller, MIC, WSFO Omaha; Bob Snider, MIC, WSFO Detroit; Ray Waldman, MIC, WSFO Chicago; Don Stoltz, MIC, WSFO Bismarck; Bob Hamilton, MIC, WSFO St. Louis; Ellis Burton, MIC, WSFO Denver; Allen Pearson, Director, NSSFC; Elroy Jagler, MIC, WSFO Milwaukee; John Lee, MIC, WSFO Louisville; Glen Sachse, MIC, WSFO Indianapolis; Sandy Miller, MIC, WSFO Sioux Falls; John Graff, MIC, WSFO Minneapolis; Fred Ostby, Deputy Director, NSSFC; and Dick Myers, Director, WSTTC, Kansas City, Mo.

## FROM THE GALLEY



### SHRIMP TEASERS

- |   |                                |
|---|--------------------------------|
| 2 cans (4 ½ to 5 ounces each)<br>small shrimp | 3 tablespoons sour cream       |
| 2 cans (5 ounces each) water<br>chestnuts     | 2 teaspoons lemon juice        |
| Salt  | 1 teaspoon minced green onion  |
|   | Dash liquid hot pepper sauce   |
|   | Thinly sliced green onion tops |

Rinse canned shrimp in cold water; drain well. Drain water chestnuts. Mash 1 can of shrimp. Reserve the remaining can of shrimp for garnish. Cut water chestnuts into 1/8 inch slices crosswise. Sprinkle with salt. Combine sour cream, lemon juice, onion, hot pepper sauce, and mashed shrimp. Mix well. Spread water chestnuts with shrimp mixture. Garnish each canape with a slice of green onion top. Place a shrimp in the center of the slice. Makes approximately 72 canapes.

### TUNA TARGETS

- |  |  |
|--|--|
| 2 cans (6 ½ or 7 ounces each)<br>grated tuna | 2 tablespoons instant minced<br>onion        |
| ½ cup mayonnaise or salad<br>dressing        | 1 teaspoon paprika                           |
| ¼ cup butter or margarine,<br>softened       | 1 pound loaf unsliced day old<br>white bread |
|  | 32 stuffed olives                            |

Drain tuna. Combine all ingredients except bread and olives. Mix well. With a sharp serrated knife cut crusts from bread. Cut bread lengthwise into 8 slices, approximately ¼ inch thick. Spread each slice with ¼ cup tuna mixture. Place a row of 4 olives across short end of each slice of bread. Start with the olive end of the bread, roll jelly-roll fashion, being careful to keep the olives in place. Wrap each roll in wax paper, twisting ends of paper. Refrigerate several hours or overnight. To serve, slice each roll crosswise into 8 slices. Makes approximately 64 canapes.

### MAINE SARDINE CHEESIES

- |   |   |
|---|---|
| 3 cans (3 ¾ to 4 ounces each)<br>Maine sardines | 45 rectangular crackers, approxi-<br>mately 2 ½ by 1 ¼ inches |
| 2 large sour pickles                            | 2 tablespoons Dijon style mustard                             |
| ¾ pound Muenster cheese                         | 1 tablespoon diced pimiento                                   |

Drain sardines. Slice pickles crosswise and cut each slice in half. Slice cheese and place on crackers. Spread cheese with mustard. Place 2 pickle halves on diagonal corners of canape. Top with a sardine if the fish are small; if large, use ½ sardine. Garnish with pimiento. Makes approximately 45 canapes.

**More Holiday Treats on pages 4 and 5**

## Wastewater Mariculture

# Salmon Run Marks Success

A 14-pound egg-bearing chinook salmon that returned home to the Jolly Giant Creek near Humboldt State University, Arcata, Calif., marked a victory for an experimental wastewater salmon rearing project being conducted at the university.

For the past six years, Fisheries Professor George Allen and his students have been involved in a dramatic experiment to see whether or not artificially reared salmon would survive in the ocean and return to the ponds in which they were reared, thus establishing a "run."

Two years ago, three adult males returned home to the creek, but the efforts of the researchers could not be termed

successful until an egg-bearing female showed up. This year, the female, whose fin markings positively identify her as belonging to the project, proved the cycle could be established.

The salmon are reared in recycled domestic sewage water from the City of Arcata, in an effort called "wastewater mariculture." Operating funds for the experiment came from the NOAA Sea Grant program. Other agencies involved include the California Wildlife Conservation Board, which provided the capital funds, the City of Arcata which provided the land for the construction of the fish rearing ponds, and the California Department of Fish and Game, which provided the surplus salmon eggs.



Humboldt State University Professor George Allen displays the first female salmon to return from the pioneering planting of "wastewater" fish. (Photo: Arcata Union)

# **National Oceanic and Atmospheric Administration**

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