



ESSA NEWS

U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

No Measurable Change in World's Oxygen Supply, Three-Year Commerce Scientific Study Concludes



Dr. L. Machta

Two Commerce scientists--Dr. Lester Machta of ESSA and Ernest Hughes of the National Bureau of Standards--have found that there has been no discernible change in the world's oxygen supply during the last 60 years, and that if all the known recoverable reserves of fossil fuels were ultimately burned,

standard determined by a gravimetric technique as 20.959 percent by volume with one standard deviation of plus or minus 0.006 percent by volume.

Three parts were taken from each sample, and each part was measured at least ten times. The average for all 78 samples is 20.9458 percent by volume of dry air, but the scientists recommended a value for oxygen concentration of dry air of 20.946 percent by volume.

In February 1970, Mr. Hughes collected ten nearly identical samples from a rural Maryland site. The average value by the same analysis was found, again, to be 20.946.

The authors compared their measurements with past observations. There are only five measurements, or series of measurements, of the absolute oxygen concentration in the atmosphere between 1910 and 1970. All reliable data since 1910 fall in the range of 20.945 to 20.952 percent by volume. Machta and Hughes believe the best of these measurements were obtained in 1910 in Boston, and that they, too, demonstrate a value of 20.946 percent by volume.

Between 1910 and 1967, they reported, the combustion of fossil fuels such as coal, oil, and natural gas--known users of atmospheric oxygen--would result in the very small reduction of atmospheric oxygen of 0.005 percent by volume.

Extrapolation of the depletion of oxygen due to fossil fuel burning to the day when all known recoverable reserves are consumed led them to the belief that the concentration of atmospheric oxygen then would be about 20.8 percent by volume.

The direct effects on human breathing, they said, would be negligible.

there would be no significant effect of oxygen reduction on human breathing. This report, published in the June 26 issue of *Science*, does not deal with other pollution problems rising from the burning of fossil fuels.

The project, conducted over a three-year period, between 50 degrees North and 60 degrees South latitude, was inspired by a request from the late Dr. Lloyd Berkner to the Office of the President's Science Advisor.

ESSA and the National Science Foundation collected 78 samples during 1967 and 1968 by the oceanographic ships USC&GSS OCEANOGRAPHER and the NSF's ELTANIN, over the Continental Shelf and the open ocean. The Analytical Chemistry Division of the National Bureau of Standards developed the method of analysis and determined the oxygen content.

Samples were collected, after drying, in one-liter evacuated stainless-steel flasks. The oxygen content of the samples was determined by repeated comparison with a gas of known oxygen content.

The oxygen content of the comparison standards was derived from a primary

RFF Wins First Unit Citation Award for 1970



RFF Acting Director W.S. Callahan (right) accepts award on behalf of the RFF staff from Dr. W.N. Hess, ERL Director.

The Research Flight Facility has received the first ESSA Unit Citation for Special Achievement. This award recognizes outstanding individual and collective efforts which contribute to ESSA's mission. RFF was nominated for the citation in recognition of their exceptional achievements while participating in the Barbados Oceanographic and Meteorological Experiment (BOMEX) and Project Stormfury. During these two projects conducted in 1969, the flight crews and scientists flew mission after mission with exceptional precision under short turn-around schedules. The hours of flight time logged were far above normal operational requirements. The hazards of flight were very close to the ocean surface and, in severe weather during hurricane penetrations, exposed these personnel to extreme risks and personal hardships. Despite these risks, the team performed with distinction and without accident in fulfilling the operational and scientific requirements. Dr. Wilmot N. Hess, ERL Director, made the presentation during a banquet held in Miami June 5 to celebrate the 100th anniversary of the National Weather Services.

Correction

The Improved TIROS Operational Satellite-1 (ITOS-1), launched by NASA, Jan. 23, orbits the earth every 115 minutes, not 15 minutes as stated in ESSA NEWS, No. 25, June 19.

President Commends Cooperative Observers for Weather Services

In a June 2 letter of tribute to America's Cooperative Weather Observers, President Nixon said:

"This year marks the 100th anniversary of the founding of our national weather service. Your tradition as volunteer weather observers, however, antedates the government's official weather service by several decades. Your predecessors established weather information networks early in the last century, and some of your own families have kept weather records at the same sites for generations. Many of you have made observations every day for 30, 40, or 50 years, and some of you for over 60 years.

"The observations you record are vital to the agriculture, industry, and commerce of our country. They help to reduce loss of life and property from tornadoes, hurricanes, floods, and other weather hazards. Collectively, your records constitute the climatic history of the United States, an irreplaceable and unparalleled heritage of weather knowledge.

"Your efforts have earned you the gratitude of your fellow citizens many times over, and your work deserves particular appreciation today, when so much attention is being given to our environment. It is especially appropriate that your work receive special recognition during the Centennial of the United States Weather Services, and I am very pleased to express my thanks to you on behalf of all Americans."

USC&GS RESEARCHER in Norfolk For Outfitting and Final Tests

The USC&GS Ship RESEARCHER has arrived at the Atlantic Marine Center in Norfolk for her final outfitting. The RESEARCHER will first undergo builder's tests, have her instrumentation installed, and train a crew before assignment to Miami late this fall.

\$11.50/PERSON

OPTIONAL DRESS

ESSA AWARDS NIGHT DINNER DANCE

FRIDAY * JULY 10, 1970

INDIAN SPRING COUNTRY CLUB
13501 LAYHILL ROAD * SILVER SPRING, MARYLAND

COCKTAILS 7pm. * DINNER 8pm. * DANCING 10pm. -1am.

New Honolulu-Suitland Circuit Is One of Most Advanced

The Weather Bureau's Suitland-Honolulu data facsimile circuit--one of the world's most advanced meteorological telecommunications circuits--became fully operational, May 25. This allowed the Federal Aviation Administration to shut down the two meteorological service teletypewriter circuits it had been operating for the Weather Bureau between San Francisco and Honolulu. These two circuits, in addition to any data or facsimile transmissions from San Francisco, are now routed to Honolulu via the regional telecommunications hub at Suitland. The Suitland-Honolulu circuit, presently designated as a data circuit GDA-60163 (Government Data Alternate), employing the Comsat satellite relay between San Francisco and Honolulu, will be upgraded to a higher quality circuit specially conditioned for facsimile and telephoto transmission, effective July 1. The new designator for the circuit will be GF-10211 (Government Facsimile).

Safe Boating Week Begins June 28

Safe Boating Week begins June 28, and the Coast Survey has announced plans for hydrographic surveys during the next five years in 18 states, Puerto Rico, and the Virgin Islands, to provide essential data for updating the nautical charts for safe boating. The Coast Survey issues nearly three million nautical charts each year for recreational, commercial, and military craft. The Coast Survey's printing schedules are currently being revised to permit more frequent publication of new editions and revisions of nautical charts. These programs are designed to meet the needs of the rapidly growing number of pleasure boatmen in the United States. Close to 44 million Americans are expected to engage in recreational boating this year, with the number expected to rise to nearly 100 million in another 30 years. In addition, new techniques are being developed for the production of the larger conventional charts used primarily by commercial and military vessels. More frequent surveys are required to produce charts for safe and economical operation of large ships, including giant oil tankers, which are increasing.

Three Weather Station Heads, One State Climatologist Named



E. S. Addison III

R. E. Lucas

E. D. Pike

Robert E. Lucas has been selected as official in charge of the Oakland, Calif., Weather Bureau Office. Mr. Lucas joined the Bureau after World War II at Oakland after discharge from the Army Air Force. He has served at both Oakland and Point Arguello during his Weather Bureau career.

Edwin S. Addison, III, has been named the new meteorologist in charge of the Madison, Wisc., Weather Bureau Office, succeeding Stephen J. Rigney. Mr. Addison, presently the advisory agricultural meteorologist at New Brunswick, N. J., expects to assume his new duties at Madison early in August. His other Weather Bureau assignments have been at Grand Rapids, Mich., and Indianapolis, Ind. Mr. Addison holds a bachelor's degree from Washington University at St. Louis and a master's degree in meteorology from Rutgers University at New Brunswick, N. J.

Ellis D. Pike, former principal assistant of the Wichita, Kans., Weather Bureau Office, now heads the office as meteorologist in charge. He succeeds W. Gordon Wylie who is transferring to Indianapolis. Mr. Pike has been employed with the Weather Bureau for 24 years, 17 of which were spent at Wichita. Prior to his Wichita assignment, he served with the Bureau at Topeka, Kans., Chicago, Ill., and St. Louis, Mo. Mr. Pike received his training in meteorology while serving in the military service.

James T. Bradley, formerly on the staff of the Weather Bureau Forecast Office in New York City, is the new ESSA State Climatologist for Florida. Mr. Bradley assumed his responsibilities at Lakeland, Fla., June 1.

Lasaro Maipi, Micronesian Management Intern, Graduates



Left to right: John Norris, PRH Personnel Officer; Dr. E. Kleinjans, Chancellor, East-West Center; G. Trifonovitch, East-West Center; and Lasaro Maipi.

Lasaro R. Maipi, supervisory meteorological technician in the Weather Bureau Office, Truk, Caroline Islands, recently received a certificate of recognition for completing a year of college work at Kapiolani Community College under the Micronesian Management Scholarship Program. Mr. Maipi is the second management intern to receive instruction under the scholarship program, jointly sponsored by the Weather Bureau and the East-West Center at the University of Hawaii, to develop a nucleus of potential Micronesian managers interested in meteorology. Scholarship program graduates will eventually succeed the Americans who now serve as officials in charge of the weather stations in the Trust Territory.

ESSA Weather Wire Pamphlet Published

The ESSA Office of Public Information, in cooperation with the Weather Bureau's Public Weather Section, has published a new pamphlet entitled "The Other Wire" for use by Weather Bureau stations and operators of the ESSA Weather Wire. The two-color, eight-page illustrated publication describes the service and the types of weather information carried on a typical ESSA Weather Wire circuit. For copies, contact: Chief, Public Weather Section, W1132, Weather Bureau headquarters, Silver Spring, Md. 20910.

World's First Computerized Sailing Directions Published

The world's first computerized printing of a book of sailing directions has been published by the Coast Survey. The first printing from automatic composition was that of the 1970 edition of Coast Pilot 4, covering the Atlantic coast from Cape Henry, Va., to Key West, Fla. The sailing directions provide navigational information which cannot be shown graphically on marine charts. This includes navigation regulations, outstanding landmarks, channel and anchorage peculiarities, dangers, weather, ice, freshets, pilotage, and port facilities. The manuscript for the new edition was keyboarded on tape instead of being set by linotype. The information was then transferred to magnetic tape by a computer, which eliminated the necessity of ever having to keyboard the whole book again. The automated method reduced the production time from over six months to less than three months. The new book may be purchased for \$2 from the Coast Survey, Distribution Division (C44), Washington, D.C. 20235 or from Coast Survey agents in ports throughout the area covered.

Svensden To Join U.S. Delegation At Pan American Institute Meeting



Kendall L. Svensden, chief of the Analysis Branch of the Coast Survey's Geomagnetism Division, will be a member of the U.S. delegation that will attend meetings of the 22-nation Western Hemisphere organization of the Pan American Institute of Geography and History (PAIGH) in Mexico during July. This will be the first meeting of the Commission on Geophysics that was created at the PAIGH General Assembly in Washington, D.C., June 1969.

Items to be considered for ESSA NEWS must be received by Monday for publication the following Friday. Send material to: Office of Public Information, ESSA, Room 804, Bldg. 5, Rockville, Md. 20352. Phone (301) 496-8243.

National Oceanic and Atmospheric Administration

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