

# TOPICS

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# TOPICS

January - February 1965

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THE COVER: Floods hit Oregon and Northern California. The remains of a bridge over the Eel River at Rio Dell. Photograph by Eureka News papers Inc.

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'I am asking for your very best effort.'

-- President Johnson

On December 4, President Lyndon Johnson spoke at a Washington ceremony observing the 10th year of the Federal Government's Incentive Awards Program. He commended Government employees "who have been diligent in seeking ways to reduce costs, and diligent in increasing efficiency." The following are excerpts from the President's remarks.

"... A President's day is never long enough for all the things that he might like to do. I would like to get out and meet with the people who work with me. I would like to see more of the men and women who are in charge of the bureaus. I would like to just sit and talk with them, listen to their ideas, perhaps get them to listen to some of mine. I should like to meet with employees, to discuss ways to keep government service alert and proud. I so much want our government service to be strong. I want it to have those qualities that make this a great and a decent country. I want it to be compassionate. I want it to be human, yet free of venality. I want it never to take itself for granted because that is the mark of a bad servant. An unmistakable sign of integrity in government is a sense of responsibility to the taxpayers. . . .

"... A man will sometimes think that because his rank is modest he is insignificant in the great scheme of things. But I have read what Nehru said as he worked with his colleagues and the British Ambassador on plans for a free India:

'You know, we are small men and unimportant. But the cause in which we work is great—and some of that greatness touches each of us.'

"That is the whole spirit of the public service with which I have been so proud to have been associated all of my adult life. When I became your President one year ago, I assigned top priority to efficiency and economy in government. I pledged that we would root out waste and inefficiency wherever we found it. I believe we have made good on that pledge. I believe we have the people's confidence in our sincerity. But we must continue to earn that confidence. Controlling waste is somewhat like bailing a boat: You have to keep at it. I have no intention of easing up on my insistence on getting a dollar of value for each dollar we spend. . . .

"We are going to put 'thrift' back in the dictionary. As President, I can, and I will, make the major decisions on holding total spending to the rock bottom. But most of the opportunities to increase efficiency and to find less costly ways to do business occur in the work that you do every day. And here is where I just must look to you and rely on you, because no one person can do this.

"I want your help. I want every supervisor, I want every employee, to continually ask themselves two questions: What is it costing to do this work? Is there a way to do it as well or better that would cost less?

"I want you to think of your bureau or your unit as though it were your own little private business. Would you have as many employees on your personal payroll? Would you be willing to write them checks every two weeks, the same amount that you are writing them with Uncle Sam's name signed? If they were working for you, would they be producing more? Could you make a profit with the practices that you are following? Where would you start to cut expenses if you didn't?

"After all, really this is your business. You are the ones that are supporting it with your deductions, with your taxes, and you ought to be concerned with it. This is what a manager is there to do, and it is why I like to see tough-minded but fair people come into government, with business experience. They are accustomed to market competition where quality and low unit costs make the difference between swimming and sinking. They can bring that state of mind to the management of the public's business. Where they do, everybody benefits.

"But I am convinced that we have career managers in government who are just as good as any managers in private business. I see evidence of this every day as our cost reduction program produces improvements and savings. And what I want you to understand this morning is that these talents must now be put to work at full capacity.

"I am asking for your help. I am asking for your cooperation. I am asking for your very best effort. And you will have the gratitude of your country and the gratitude of your President." ■

# National Oceanic and Atmospheric Administration Weather Bureau Topics and Personnel

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# Hodges Resigns as Secretary of Commerce; John T. Connor Appointed by President

The resignation of Luther H. Hodges and the appointment of John T. Connor to succeed him as Secretary of Commerce were announced by the White House on December 16, 1964.

In a letter to Secretary Hodges, President Johnson wrote:

"I am personally reluctant to accept your resignation. Your achievements as Secretary of Commerce have been a continuation of the selfless, patriotic dedication you have exhibited throughout your long service to your State and your Nation.

"Your leadership in the Commerce Department has been marked by prudence and progress. You

have given of your wisdom and your tolerance not only to your own Department, but to the entire Cabinet as well.

"Under your leadership, our country has entered into a new era of international trade, increased cooperation between government and industry, and technological advancement for the industrial and commercial segments of our national life.

"Good and wise men, sympathetic to the needs of the people, ready to work around the clock to meet those needs—these men are rare and precious. You are one of that scarce breed. You leave this government with my affection and my warmest best wishes." ■

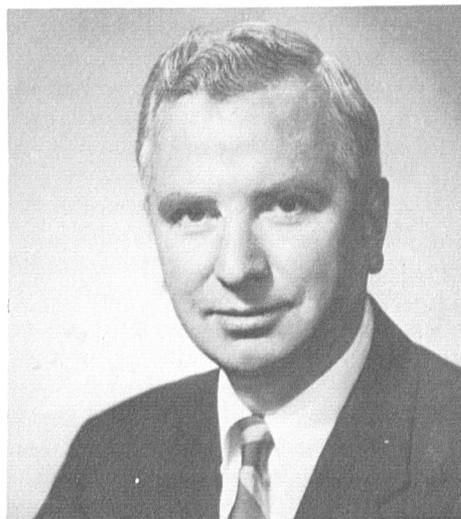
## John T. Connor, New Secretary of Commerce

John T. Connor, the new Secretary of Commerce, brings to his position a wide variety of experience in public service and private industry.

Mr. Connor practiced law in New York City for several years before being appointed general counsel of the Office of Scientific Research and Development in 1942. During 1944-45 he was an air combat intelligence officer in the Pacific for the U.S. Marine Corps. Upon his return from military duty in 1945, he became counsel to the Office of Naval Research and then was named special assistant to the late Navy Secretary James Forrestal.

Joining Merck & Company in 1947 as general attorney, Mr. Connor held several executive positions before he was elected president of the company in 1955.

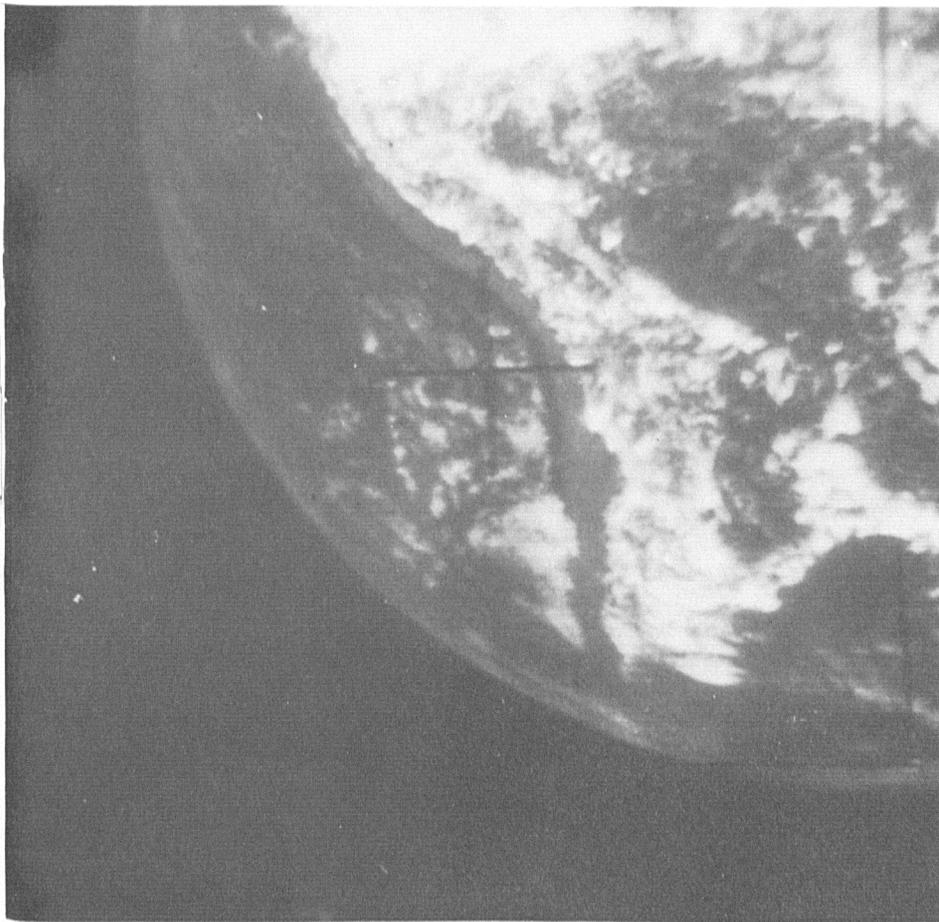
Mr. Connor has a B.A. degree from Syracuse University (1936) and a law degree from Harvard Law School (1939). A member of Phi Beta Kappa, he has three honorary degrees, a D.Sc. from Philadelphia College of Pharmacy in 1959; a D.Sc. from Hahnemann Medical College in 1964; and a LL.D. from Rutgers University in 1964.



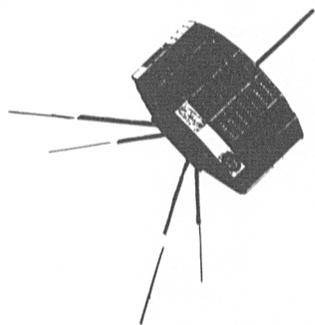
John T. Connor (photo by Fabian Bachrach)

At the time of his appointment, he was vice chairman of The Business Council, a member of the Board of Trustees of the Committee for Economic Development, a trustee of the National Safety Council, a member of the Advisory Committee for the Program on Technology and Society of Harvard University, and a member of the Board of Directors of the General Foods and General Motors Corporations.

A native of Syracuse, New York, Mr. Connor, 50, is married to the former Mary O'Boyle, and they have three children, John (age 21), Geoffrey (age 18), and Lisa (age 14). ■



A TIROS IX photograph, taken from an altitude of 1360 nautical miles, shows the outline of South America's west coast.



## TIROS IX in Orbit

TIROS IX, the forerunner of the TOS cartwheel satellites, was launched by the National Aeronautics and Space Administration on January 22. It was the first spacecraft ever placed in polar orbit from Cape Kennedy.

Although plans called for a 400-nautical-mile circular orbit, the second stage of the Delta launch vehicle burned too long, sending the satellite into an elliptical orbit with an apogee (high point) of 1602 miles and a perigee (low point) of 436 miles.

In spite of this unexpectedly high apogee, pictures transmitted from TIROS IX's two vidicon TV cameras are of good quality and useful meteorolog-

ically. Early photographs received at the readout stations at Fairbanks, Wallops Island, and Point Mugu were taken from a high point in the orbit. Each picture included an extremely large area, such as the entire eastern half of the North Atlantic. As the perigee moves toward the sun side of the orbit, pictures will be taken from lower altitudes and will cover smaller areas.

The 305-pound experimental satellite is the first TIROS to be launched for more than a year. Because of the long operational lifetimes of TIROS VII (launched on June 19, 1963) and TIROS VIII (launched on December 21, 1963), there was no need for an additional satellite in 1964.

TIROS IX's near-polar orbit and the earth's rotation beneath it give the satellite the capability of photographing all sunlit portions of the earth. It rolls along the orbit like a wheel with its cameras pointing outward from the rim, so that each camera views the earth once during every revolution. (See TOPICS, June 1964.) ■



The Eel River destroyed a small town called South Fork, which once occupied the clearing at right. Photograph by Eureka Newspapers Inc.

## Record - Breaking Floods Hit Oregon and Northern California

In December, on the anniversary of the 1955 floods, record flooding again brought disaster to the northwestern United States, particularly Oregon and northern California. Most of the major rivers there reached stages higher than those recorded during the great floods of December 1955, and at many gaging points the rivers attained the highest stages ever known. Preliminary estimates of damage run in the hundreds of millions of dollars, and 45 people in a five-State area lost their lives during the period of storm and flood.

In northern California, many towns along the Eel, Klamath, Van Duzen, Trinity, Mad, and Smith rivers were isolated or abandoned. Some smaller communities were almost totally destroyed. All major highways and railroads were closed. On the Rubicon River in the central Sierras, Hell Hole Dam failed, releasing about 33,000 acre-feet of water within several hours and creating a flood wave that washed out a number of bridges.

Every main highway in Oregon was cut, and many communities were completely isolated. After the flood crests had been reached, rescue operations were hampered by several days of heavy snow.

The Weather Bureau River Forecast Center at Portland and the Federal-State River Forecast Center at Sacramento issued flood warnings well

in advance. After the flooding began, however, many river gages were destroyed and communications broke down over large areas, making it impossible for the forecasters to obtain rainfall or river reports. Subsequent river stage predictions for many points were based on quantitative precipitation forecasts and evaluations of scattered rainfall and river measurements. In spite of these handicaps, the flood predictions were remarkably accurate.

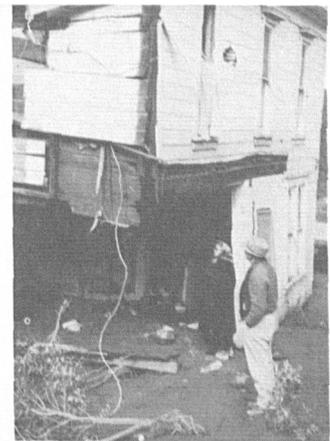
Governor Edmund G. Brown of California visited the joint Federal-State flood forecasting service office in Sacramento and was briefed on the potential flood situation.

During the flood emergency, Oregon Governor Mark O. Hatfield established a command post in the Oregon Water Resources Department, which handled the distribution of Weather Bureau forecasts and warnings to local areas and also made possible transmission of weather reports and streamflow conditions to the River Forecast Center at Portland.

Governor Hatfield has commended the Weather Bureau's performance during the floods, saying "the advice . . . on the stages, time, and areas needing evacuation minimized the suffering and is appreciated by all the people of Oregon."



A Christmas scene near Fortuna, California.  
Photograph by Eureka Newspapers Inc.



Fifteen feet of Eel River  
waters ran through this house  
at Pepperwood, California.  
American Red Cross photo.



The Eel River invaded the town of Weott, California. Photo-  
graph by Eureka Newspapers Inc.



A view from the south bank of the Klamath River shows the  
remains of the Douglas Memorial Bridge and, at its far end,  
what is left of Klamath, California. Photograph by Eureka  
Newspapers Inc.

Weather Bureau offices on the west coast had been alerted by the NMC's weather charts for the period December 17 to 19, which showed that the upper-air circulation was assuming an ominous pattern similar to others that had poured huge quantities of rain on the coastal region. The Weather Bureau Airport Stations at San Francisco and Seattle began issuing forecasts of heavy rains for northern California and Oregon. At Sacramento and Portland, the River Forecast Centers maintained 24-hour river watch beginning on the weekend of December 19 and 20, and began issuing flood forecasts on the 20th.

By Monday morning, the heavy rains of the preceding days had cut communications between the Eureka (California) River District Office and many of its river and rainfall observers. Because of a power failure at a relay station, Eureka was unable to call its radio rain gages. Power was restored temporarily during the day, but it failed again at midnight and was out of service for the rest of the emergency. Disruption of communications spread to much of Oregon.

Thereafter, river stage forecasts were based on the latest quantitative precipitation forecast and an evaluation of the sparse information that was

received. Furthermore, the forecasters were dealing with floods of a magnitude never before experienced.

"Without the quantitative precipitation forecast for guidance," says Sacramento Hydrologist in Charge Richard Tarble, "the River Forecast Center could not have given any warning, or at best only a very few hours, and would not have come anywhere near estimating the crest stages that were observed."

At least 29 gaging stations in Oregon were destroyed by the flood waters, and many more were damaged. Bridge washouts, slides, and high water hampered access to many undamaged gaging stations. In the tributaries of the Columbia River, tremendous sustained flows went largely unreported because of gage and communications failures. In the north coastal area of California, 11 of the 14 river gages used in flood forecasting were damaged or destroyed.

The River District Offices that carried the brunt of the work of collecting reports and disseminating forecasts and warnings were—in addition to Eureka—San Francisco, Sacramento, Medford, Portland, Spokane, Boise, and Reno. At all these offices, the staff worked long hours under adverse conditions during the flood period. ■

# Regional Director Appointments Announced

Appointment of Regional Directors for the New York, Fort Worth, Kansas City, and Salt Lake City Regional Offices was announced officially on December 30. The new Regional Directors are: Karl R. Johannessen, Region I; Wilmer L. Thompson, Region II; Roy L. Fox, Region III; and Hazen H. Bedke, Region IV. Within their respective regions these men are responsible for directing the Bureau's broad scientific and public services in the areas of climatology, hydrology, weather observing, and weather forecasting.

## Region I



Karl Johannessen has been with the Air Weather Service since 1951. In his most recent position of Supervisory Physical Scientist, he was concerned with meteorological and geophysical problems of the space age. Before that he was a scientific services consultant working on technical improvement of Air Weather Service forecasts for the Northern Hemisphere.

Born in Aalesund, Norway, Mr. Johannessen attended Oslo University, earning his bachelor's degree in mathematics in 1938 and his master's degree in 1940. He was attending an engineering course at the Royal Norwegian Military Academy when the Germans invaded Norway in April 1940. With other academy cadets, he took part in the fighting around Oslo. He later escaped from occupied Norway into neutral Sweden, intending to join Norwegian forces in England. Passage from Sweden to England was difficult to obtain at that time, the only route being by air during the dark winter nights. He waited

nearly a year in Sweden before a seat on a plane became available and spent the interval teaching mathematics at Uppsala University, Sweden.

Mr. Johannessen was commissioned a lieutenant in the Royal Norwegian Air Force in 1942 and during most of the war served as a meteorological officer at various RAF stations in the United Kingdom. In May 1945, following the German capitulation in Norway, he was transferred back to his homeland. After separation from the air force, he joined the Norwegian Meteorological Institute as senior meteorologist for the aviation forecasting service in Oslo.

In 1950, he received a Cand Real degree, equivalent to the American Ph.D., from Oslo University. He has also done postgraduate work in meteorology and geophysics at the University of Chicago, under a Rockefeller Public Services award that he won in 1958.

Mr. Johannessen is a member of the American Meteorological Society and is currently serving a three-year term as Councilor. Author of numerous articles and technical reports, he is a member of the American Geophysical Union, a Fellow of the Royal Meteorological Society, and a member of the World Meteorological Organization's Aerological Commission.

## Region II



Regional Director Wilmer Thompson, who has provided administrative leadership for Region II since mid-1960, now assumes the added responsibility of directing its scientific and public services.

A native Texan, Mr. Thompson attended Texas Christian University and Southern Methodist University and received his bachelor's degree from the University of Chicago. He began his Weather Bureau career in 1930 as a Junior Observer at Groesbeck. Among his duties at Groesbeck were flying and repairing the kites that were then used for observations. From 1931 to 1933, he was stationed at Dallas.

In 1933, Mr. Thompson left the Bureau for a short time to supervise a WPA project preparing summaries of weather records. Returning to the Bureau, he was engaged in aviation forecasting from 1933 until 1941. He served at the University of Chicago Station for one year and, in 1942, transferred to Washington as Senior Analyst with the WBAN Center. He worked at the International Aviation Forecast Center of LaGuardia Airport from 1944 to 1947 when he became Chief Airport Meteorologist at the Weather Bureau Airport Station in Miami. In 1955, he received the Silver Medal for Meritorious Service in recognition of the weather services he had provided for domestic and international aircraft operations.

## Region III



Roy L. Fox, who has been Regional Administrative Officer since 1960, continues in the top post at the Kansas City Regional Office.

Mr. Fox joined the Weather Bureau in 1938 as an observer at Topeka and later served at Tulsa and Atlanta. In 1944, he went to Anchorage, where he became Meteorologist in Charge four years later. He transferred to Billings as MIC in 1950, and in 1954 was made MIC of the Pacific Supervisory Office at Honolulu. From Honolulu, he moved to Asheville in 1958 as Director of the National Weather Records Center.

A native of Kansas, Mr. Fox graduated with honors from Kansas State College in 1931. He holds a master's degree from the University of Michigan

and has studied meteorology at the University of Chicago on a Government scholarship. He has also studied at the universities of Kansas and Tennessee and is now completing work for a master's degree in public administration at the University of Missouri. Before entering the Weather Bureau, he taught science in Kansas high schools for seven years.

## Region IV

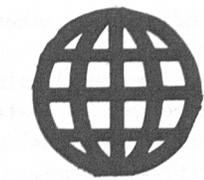


Hazen H. Bedke, Regional Director at Salt Lake City, comes to the Weather Bureau from the U.S. Air Force First Weather Wing at Hickam Air Force Base, Hawaii, where he provided meteorological support to Air Force and Army units in the Pacific area.

Mr. Bedke joined the Air Force in 1941 at Fort Douglas, Utah, and attained the rank of colonel during his career in the Air Weather Service. Before assuming his duties in Hawaii in 1961, he was Commander of the Fourth Weather Group at Andrews Air Force Base, Maryland, providing meteorological and geophysical support to the Air Research and Development Command. Earlier, he was Deputy Director, Scientific Services, Air Weather Service at Andrews Air Force Base, assisting in the management of technical and environmental support programs for the Air Force.

Mr. Bedke has served on a number of meteorological committees, including the Joint Meteorological Group and the SEATO Meteorological Committee. He was the Air Force member of the Steering Committee for the Joint Numerical Prediction Unit in Washington.

Born in Idaho, Mr. Bedke received his bachelor's and master's degrees from the University of Utah. He also holds postgraduate degrees in meteorology (California Institute of Technology) and in physical oceanography (Scripps Institute of Oceanography).



## Washington Now Has World Weather Center

The World Weather Center-Washington, a vital part of the World Weather System now being developed by the World Meteorological Organization, began operation on the first day of 1965. Plans for the World Weather System include three World Weather Centers—one in Washington, another in Moscow, and a third in Melbourne, Australia.

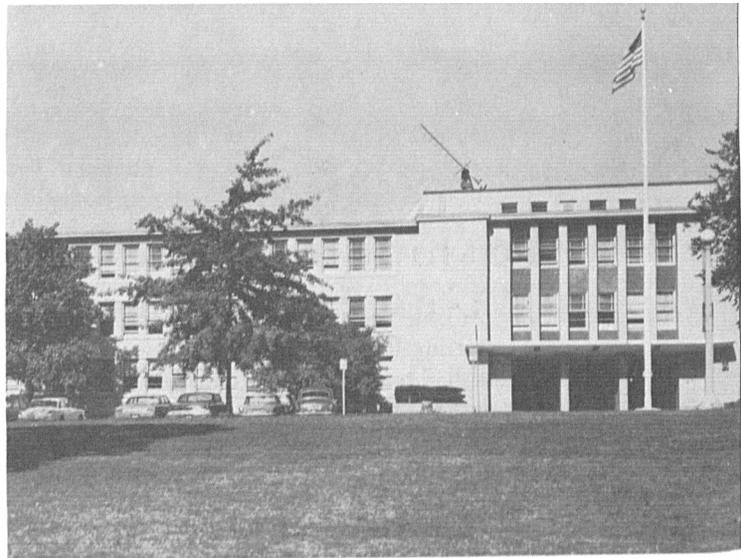
In announcing the designation of the Washington Center, Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology, said: "The Washington World Weather Center is a substantial step forward. It will enable the Weather Bureau to improve its forecasting services within our own borders. It will also enable the Bureau to enlarge significantly the amount of the globe's surface covered by its forecasts. It will thereby improve its services to U.S. activities elsewhere in the world and will improve our assistance to other nations."

The functions prescribed for World Weather Centers in WMO decisions will be performed by the National Meteorological Center and the National Weather Satellite Center, with assistance from other Weather Bureau components in such activities as training and archiving.

The Washington Center will gather, process, and distribute weather observations and prepare weather analyses for as much of the globe as possible. From the Center, processed weather information will be transmitted to national meteorological services and to Regional Weather Centers when they are established. The World Weather Center will train meteorologists from the United States and abroad, conduct both basic and applied research on large-scale weather problems, and archive weather information for research.

Many of these activities have been carried on for some time by the National Meteorological Center, the National Weather Satellite Center, the National Weather Records Center, and other Bureau components. They will continue to be conducted by the same units, acting as the World Weather Center.

Other functions planned for the Center cannot be performed at the present time, but will be added in progressive steps. For example, the existing satel-



World Weather Center—Washington

lite system does not provide the needed global coverage. However, the TIROS Operational Satellite (TOS) system expected to begin next year will eliminate that deficiency. The TIROS IX satellite, launched on January 22, has already demonstrated the possibility of obtaining routine global coverage.

Although communications have recently been expanded by the establishment of the Washington-Moscow link and a Washington-Brasilia circuit connecting the Northern and Southern Hemispheres, the facilities necessary for collecting and distributing weather information on a global basis do not yet exist. For the present, the Washington World Weather Center will attempt to meet the expressed needs of national meteorological services through available telecommunications facilities.

Plans for the World Weather Center include extension of the area and the altitude of weather analyses. The Weather Bureau now prepares analyses for the area north of latitude 10 degrees north, or as far south as Central America and the tip of India. During the coming year, the Center will begin to prepare maps covering almost all of the inhabited world. There will be a gradual expansion of the coverage when complete satellite data and additional communications lines become available.

Already, the Center has begun a study of problems and techniques of forecasting and analyzing large-scale weather systems in the Tropics. The additional information received from the Southern Hemisphere by way of the Washington-Brasilia link is being used in this research program.

The concept of a World Weather System with World Weather Centers originated in the WMO's First Report on the Advancement of Atmospheric Sciences, published in 1962, to which the late Dr. Harry Wexler, the Bureau's Director of Meteorological Research, was a principal contributor. ■



## Washington - Brasilia Link Established

An interim Washington to Brasilia communications link has been established for the exchange of meteorological information between the Northern and Southern Hemispheres. The National Meteorological Center (a component of the World Weather Center) is receiving selected surface and upper-air reports for the whole of South America.

This interim arrangement precedes the establishment of a permanent link between Brasilia and New York. Expected to be in operation before the planned implementation date of February 1967, the permanent link will allow also for exchange of facsimile data.

The World Meteorological Organization's New Development Fund is being used to establish the permanent circuit at Brasilia as part of the World Weather System. ■



## WMO New Development Projects Approved

The WMO's Panel for the New Development Fund approved three main projects to be supported by the \$1,500,000 Fund (authorized in 1963 by the WMO Congress), at a meeting in Geneva, November 10-13, 1964. These projects include development of the global telecommunications system by improvement of links between main centers in the Northern and Southern Hemispheres, planning studies for the World Weather Watch, and a long-term fellowship program in Sudan.

The specific projects were determined by the Panel after WMO Members agreed that at least 50 percent of the Fund was to be spent for improvement of existing facilities, 30 percent to 40 percent for planning the World Weather System, and 10 percent for long-term training fellowships.

Citing the inadequacy of communications between the Southern and Northern Hemisphere Centers, the Panel gave priority to the establishment of links between Brasilia and New York, Nairobi and Offenbach, and Melbourne and New Delhi. Existing communications links in the Northern Hemisphere will be used to complete the exchanges in an east-west direction.

Also as part of the improvement of existing facili-

ties, the panel agreed to support two upper-air stations, one on the Galapagos Islands and the other at Diego Garcia, an island in the Indian Ocean.

Three major planning studies for the World Weather System design were authorized to cover global observation networks, global data processing centers, and global telecommunications systems.

The third project approved was a long-term training fellowship program in the Sudan. ■

## Bureau Initiates Studies on Proposed World Weather System

The Weather Bureau has recently initiated several studies of various aspects of the proposed World Weather System.

The World Weather System (WWS), as conceived by the World Meteorological Organization, is a system in which global meteorological observations are acquired and then processed through World and Regional Weather Centers in such a way as to meet the requirements of national meteorological services. The WWS also includes the necessary communications facilities.

The United Nations General Assembly (Res. 1721) has given the WMO the responsibility for planning the details of the WWS. The WMO Executive Committee has requested the Secretary General to prepare a detailed plan for consideration by the fifth WMO Congress in its meeting in the spring of 1967. The Executive Committee recognized the enormousness of the task and urged Member States to undertake studies in support of the overall planning effort.

Weather Bureau studies recently begun include:

*Preliminary System Design*—Under the direction of Donald M. Hanson, Program Coordinator for World Weather Systems, Systems Development Office, the Bureau is examining basic concepts and possible system designs and their relationship to our national weather service needs. Contractual assistance is being given by United Aircraft Corporation. The objectives of this project are: (1) to analyze the scope, limits, and functions of the WWS, (2) to determine what proven or near-proven technology is available for use in the System and what technology may be available in the future, (3) to determine the inputs and outputs of each WWS subsystem, (4) to establish subsystem requirements and performance standards, and (5) to evaluate alternate configurations of primary subsystems, techniques, and components.

*Cost/Performance Analysis*—The Astro Electronics Division of the Radio Corporation of America been awarded a contract to analyze potential components of the World Weather System. This entails a detailed cost and performance study of major components. RCA, with the cooperation of Travelers Research Center, Inc., is concentrating its studies on three major functions of the WWS—data acquisition, data processing, and communications. The analysis is covering, by category, nearly every modern device available to gather, process, analyze, and communicate global and local weather data.

*Horizontal Balloon Studies*—With contractual assistance from G. T. Schjeldahl Company and Melpar, Inc., the TOS Systems Engineering Division of the National Weather Satellite Center is developing a small number of prototype horizontal balloons. The balloons, using thinfilm electronics, sensors, and power are designed for tracking and interrogation by satellite.

*Ocean Buoy Studies*—The TOS Systems Engineering Division of the NWSC is developing a design concept of a low-priced, moored meteorological buoy. The buoy, intended to cost \$10,000 or less in production, is being designed for satellite interrogation. ■



Meteorologists, are you using these booklets?

More than a year ago, the AMS brochure—*What is a Consulting Meteorologist?*—was distributed to Weather Bureau field stations to help them inform industry, state and local government, and individuals of the services available through private meteorologists.

If your supply of the booklets is low, additional copies can be obtained from the Central Office Publications Distribution Unit. ■

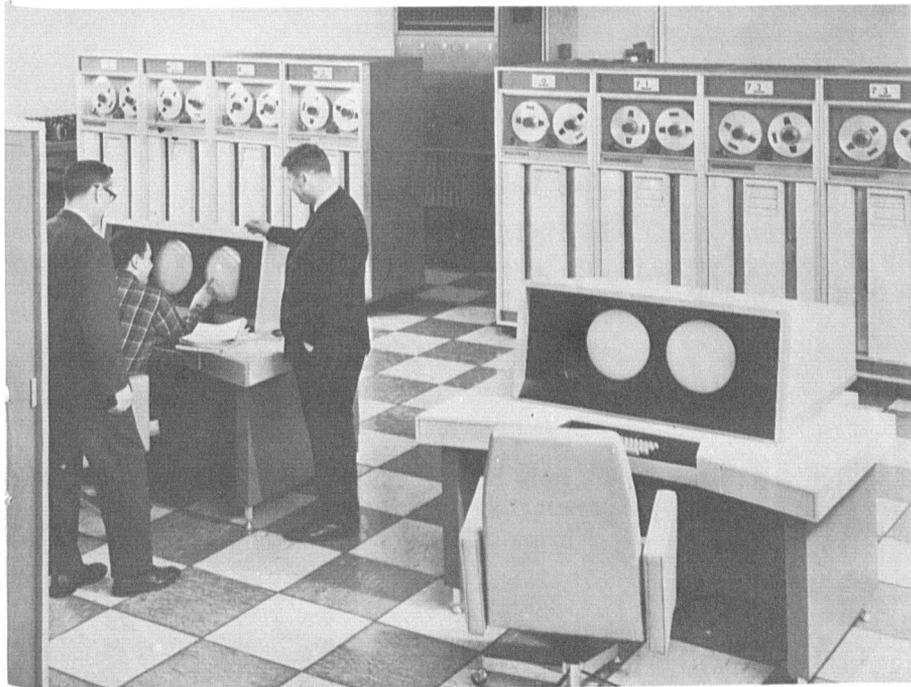
## U. S. Committee Formed for International Weather Programs

The newly formed Interagency Committee for International Meteorological Programs held its first meeting on January 7. This committee was established by Secretary of Commerce Hodges in response to a letter from President Johnson stressing the need for effective coordination between Government departments and agencies involved in international meteorological affairs.

“With the growth of international cooperation in weather matters, and particularly with the quickening of international efforts to develop a World Weather System,” the President said, “there must be even more continuing consultation among [Federal agencies] and effective coordination of their activities than has been necessary up to now.” The President continued in his letter to the Secretary, “I therefore direct that you take such action as you may deem necessary to bring the interested Federal departments and agencies into close consultation to ensure that the United States will continue to make a significant contribution to international meteorological activities.”

Secretary Hodges then requested each interested agency to appoint a representative to the committee. Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology, is chairman of the committee, and Dr. White is the Department of Commerce member. The other committee members are Harlan Cleveland, Assistant Secretary of State for International Organization Affairs; Dr. Donald F. Hornig, the President's Science Advisor and Director of the Office of Science and Technology; Dr. Hugh L. Dryden, Deputy Administrator of the National Aeronautics and Space Administration; Dr. Harold Brown, Director of Defense Research and Engineering, Department of Defense; Herman Pollock, Acting Director, Office of Science Affairs, Department of State; Dr. Leland Haworth, Director, National Science Foundation; and D. D. Thomas, Associate Administrator for Programs, Federal Aviation Agency.

The purpose of the committee is to develop national goals, policies, and plans for all international meteorological programs. The end result will be a total Federal plan to which each agency can relate its own plans. ■



Data-processing equipment used in the CDC 6600 computer system includes two control consoles. Alpha-numeric information is displayed before the operator on television-type screens in the control consoles.

Plans to consolidate major Weather Bureau computer facilities in the Washington, D. C., area will be advanced by the installation of a CDC 6600 computer at the National Weather Satellite Center and a remote terminal at the Geophysical Fluid Dynamics Laboratory (GFDL) in July.

Initially, the computer, rented from the Central Data Corporation (CDC), will replace the IBM STRETCH, 1401, and 1620 computers currently in operation at GFDL. As data processing programs in support of TIROS Operational Satellites (TOS System) become operational, the CDC 6600 will replace the IBM 7094 II and the 1401 computers at the National Weather Satellite Center.

Approximately six times faster than STRETCH, the CDC 6600 is the most powerful computer in production at the present time. The rental of the CDC and the remote terminal is \$112,000 per month—a considerable savings over the combined cost of the computers being replaced.

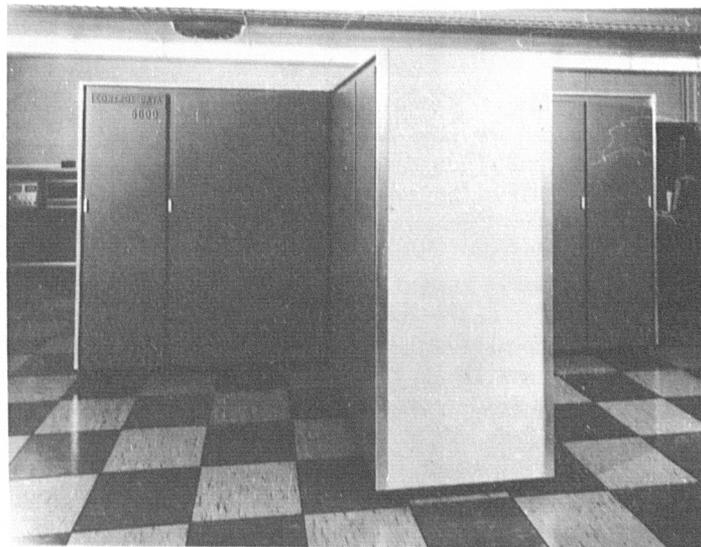
The interim consolidation plan presently calls for the decommissioning of NWSC's 7094 II/1401 in February and GFDL's STRETCH/1401 in March. The IBM 1620 at GFDL was decommissioned on December 1, 1964.

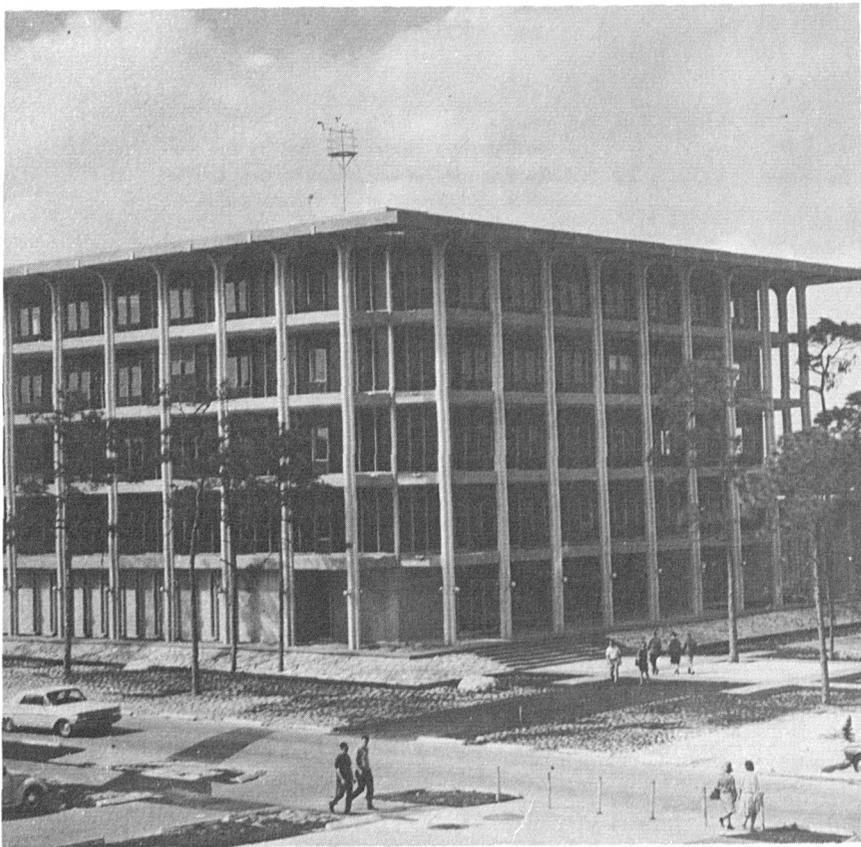
During this phase virtually all of the Weather Bureau's major automatic data processing equipment which is leased (except one IBM 7094 II/1401 system at the National Meteorological Center which will be used along with the CDC 6600 for a short "overlap" period) will be decommissioned.

It is planned that within a year, all of the Bureau's major computer work in the Washington area will be done from a single facility. ■

## Bureau's Washington Computer Facilities Will Be Consolidated

The computer itself is shaped in the form of a plus. This cabinet houses the large magnetic core memory; arithmetic control, and input/output section; and refrigeration unit.





The new Computing Center on the main campus of the University of Miami houses the District Meteorological Office, the National Hurricane Center, and the National Hurricane Research Laboratory.

## NEW



A portion of the Communications Room, with Roy Rudder and Marion Stadelé at work.

Major Weather Bureau facilities in the Miami area are now consolidated in the University of Miami's new Computing Center, which was completed in December.

The Computing Center is also the home of the University's School of Environmental and Planetary Sciences headed by Dr. S. Fred Singer, former Director of the National Weather Satellite Center.

Speaker at the dedication of the Center of January 25 was Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology. Also on the platform with University of Miami officials were Weather Bureau Chief Robert M. White and NASA Administrator James E. Webb.

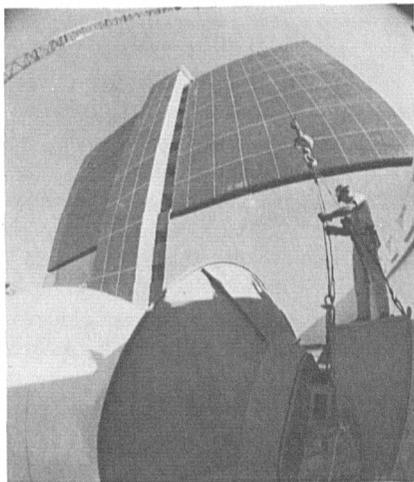
The top two-and-a-half floors of the \$1.24 million building are occupied by the Miami District Mete-

orological Office, National Hurricane Center, and National Hurricane Research Laboratory. University offices and classrooms are located on the second and third floors. An IBM 7040/1401 computer system, a library, and an 80-seat lecture hall are on the main floor.

The National Hurricane Research Laboratory will share jointly in use of the University's new IBM 7040/1401 computer complex. This new system is both bigger and faster than the GE-255 formerly available to the Laboratory and will allow both speedier processing of hurricane data and an attack on more complex theoretical problems.

With the relocation of WBAS Miami to the Center, the FAA's flight Service Station at the airport will handle routine aviation briefing. A telephone switch-

# MIAMI CENTER OPENS



Workmen prepare to hoist the Weather Bureau radar to the top of a building next door to the Computing Center. (Miami Herald photo)



Assistant Secretary Hollomon was the main speaker at the dedication of the center.

ing system from the FSS to the Bureau's Aviation Section at the Computing Center will be used to connect pilots to the Weather Bureau when calls for briefing service are beyond the capacity of the FSS briefer.

District, Aviation, and High Altitude Forecasting units are all contained in one large forecast room. Facsimile and other guidance materials are located in a central area available to all units.

Included among the facilities at the National Hurricane Center is a modern, specially reinforced wind measuring system designed to withstand winds up to 150 mph. There is also a remote unit at Miami Beach supplying automatic indications of beach wind, temperature, and sea conditions.

Communications to and from the Center have been made as secure as possible with the installa-

tion of an underground pressurized cable to the nearest telephone exchange and a parallel cable by an alternate route.

Additional emergency communications are available through single-side band radio to the Central Office, Key West, San Juan, and a number of other points in Florida. There is an emergency UHF link with area police, civil defense, and public safety offices. The Florida Civil Defense network has provided emergency broadcast links, by which the local key radio stations can be reached and for which an emergency backup broadcast unit is proposed, as is a radio teletypewriter unit with the local FAA.

A diesel power unit, sufficient to supply all necessary electrical power, is installed in a service building nearby for use in case normal power sources fail. ■

## TOS CDA Station To Be Built at Wallops Island

A weather Bureau installation in support of the TIROS Operational Satellite (TOS) System will be set up at Wallops Island, Virginia.

The station, a satellite Command and Data Acquisition facility similar to the one already in use at Gilmore Creek, Alaska, is scheduled for operation in February 1966. A contract has been let for the architectural design of the facility. The construction of the antenna foundation is expected to begin this March; construction of an operations building is scheduled to begin in May; and an 85-foot parabolic antenna will be installed. A wideband communications link with the National Weather Satellite Center in Suitland, Maryland, will be used.

NASA's Wallops Island facility will continue to operate as in the past with a full schedule of TIROS satellite acquisition work. The new TOS-unique equipment will be operated by the Weather Bureau.

## QPF Program Centralized

The preparation of official quantitative precipitation forecasts for a large part of the country is now centralized in a special unit at the National Meteorological Center.

Previously, the NMC unit prepared forecasts for the 48 contiguous States to be used as guidance material by the district and selected field forecast centers, which actually issued the official zone forecasts. Beginning January 1, the NMC forecasts became official, and the zone quantitative precipitation forecasts were discontinued east of the Continental Divide. West of this line, zone forecasts are being continued as before.

The NMC precipitation forecasts in the form of isohyets, are available in map form on the National Weather Facsimile and in coded form on Service C teletypewriter circuit. All areas within the contiguous 48 States where  $\frac{1}{4}$  inch or more of precipitation is expected during 12- and 24-hour periods are included. ■

## Climatological Data Available in New Form

At the beginning of 1965, the Office of Climatology discontinued publication of the Local Climatology Data Supplements and the Daily Series, Synoptic Weather Maps, Part II, Northern Hemisphere Data Tabulations. These two publications contained a total of approximately 20,000 pages each year.

The same information is now available to subscribers and other users on roll microfilm and in the form of microfiche. Microfiche, like roll microfilm, is a means of presenting greatly reduced photographic images on a film transparency, so that much less storage space is needed.

On roll microfilm, images are placed in a series along the filmroll which is usually 100 feet or more in length. Individual documents or items of information are often hard to find on a roll of film. A time-consuming search through the roll on a microfilm reader or viewer may be required. The search is especially difficult when a number of documents has to be assembled in a grouping different from that in which they were filmed.

Microfiche, on the other hand, is a sheet of photographic film on which a number of 16- or 35-mm. microimages are arrayed. A 4 by 6 inch microfiche, for example, contains up to 66 16-mm. document images. An entire day of Northern Hemisphere Data Tabulations can be filmed on one 5 by 7 inch sheet of microfiche, eliminating the publication of 30 to 34 pages.

A group of documents which form a natural unit can be put on a single sheet of microfiche. At the top of each sheet is a title which is legible to the naked eye. The sheets can be indexed and filed in standard filing cabinets. With commercial enlarging readers and printers, any image on a microfiche can be presented on a screen or printed on a permanent paper enlargement. ■

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### In Our Mail

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Dear Gentlemen:

In science class we learned that you took and seeded a cloud with salt and dry ice. We wonder why you don't use pepper also.

Betsy

# Antarctic "Summer" Program Underway

The Weather Bureau's meteorological program in the Antarctic is increasing its emphasis on specific IQSY and other research programs, while continuing the standard meteorological observations that have been taken there regularly since 1957. The program is funded by the National Science Foundation as part of the U.S. Antarctic Research Program (USARP).

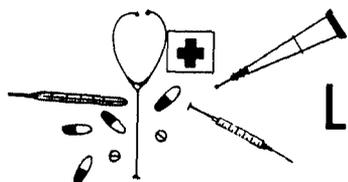
A more intensive radiation measurement program has been established at Byrd and South Pole Stations, using surface equipment at all three stations and ozonesondes at Byrd and Pole Stations. These ozonesonde measurements provide data on the vertical distribution of ozone in the atmosphere, which in turn relates to the general stratospheric circulation and to the role of solar radiation in the springtime stratospheric warming. Additional special meteorological experiments include measurement of atmospheric electricity at Eights Station and the South Pole Station.

The Weather Bureau still takes surface weather observations at Byrd and South Pole Station. Supplementary observations are made at Byrd and South Pole Stations to support summer aircraft

operations, and Hallett Station is staffed during the austral summer to support these resupply operations. The Bureau research program also continues aboard the USNS *Eltanin*, including standard surface and upper-air observations.

Also with NSF support, the Weather Bureau maintains representation at the International Antarctic Analysis Center, Melbourne, Australia, where meteorological data from Antarctic and sub-Antarctic stations are collected, recorded, and reduced. The IAAC also maintains a permanent record of Southern Hemisphere weather analyses.

Weather Bureau representatives in the Antarctic 1964-65 summer party are as follows: Helmut Boker and Jack Trice, at Byrd Station; Ray Bridwell, Robert Judd, Gene Levi, and John Shelton, at Hallett Station; Richard Bagby and Ronald Stephen, at South Pole Station. The 1965 winter party includes Douglas Johnson and James Lovill, at Byrd Station; F. H. Henderson, at Eights Station; Luis Aldaz, Leopoldo Garcia, and Edward Landry at the South Pole Station. Morton Rubin, Paul Adams, and Charles Roberts of the Central Office visited several of the Antarctic stations for inspection purposes during the summer period. ■



## Let's Be Safe in '65

In 1963, 42 Weather Bureau employees suffered on-the-job injuries which needed medical attention, caused loss of work time for one or more days or, in many cases, required hospitalization. Statistics for 1964 are not yet complete, but 47 such injuries have been reported to date.

Only YOU can remedy this unfortunate situation and improve the Bureau's safety record for 1965.

In a few Bureau work locations and activities, the accident potential is relatively great. The personnel involved are—or should be—well acquainted with the hazards and the appropriate safety measures.

In other areas, the possibility of accident exists but is relieved by the use of protective equipment.

The general, everyday work in which most of us are engaged does not seem hazardous. Nevertheless, it is contributing disproportionately to our current accident rate. On innumerable ordinary occasions, attention is relaxed, and someone becomes the victim of an accident.

So let's make a safety resolution for '65—to be alert and careful at all times and to give some thought to improving the conditions under which official duties are performed. ■

# NEWS from Region 1

## *Regional Office Appointments Announced*

On December 30, Dr. White announced the following appointments to key positions in the New York Regional Office:

- Regional Director—Karl R. Johannessen
- Regional Administrator—Lloyd E. Brotzman
- Manager, Operations Division—Charles G. Knudsen
- Regional Meteorologist—Silvio G. Simplicio
- Regional Hydrologist—Richard M. Greening
- Regional Climatologist—Norman L. Canfield
- Regional User Services Representative—Anthony E. Tancreto
- Head, WXAP Branch—Walter G. Seibert
- Head, DATAC Branch—Henry Rockwood
- Assistant Meteorologist for Techniques Improvement—Carlos R. Dunn
- Public Service Operations Meteorologist—John R. Clark
- Aviation Service Operations Meteorologist—George A. Yount
- Service Operations Evaluation Meteorologist—to be announced later
- Regional Radar Meteorologist—to be announced later



### *Regional Administrator*

The new Regional Administrator, Lloyd E. Brotzman, has been Regional Administrative Officer of Region One since 1959. Mr. Brotzman has served the Weather Bureau since July 1923, when he joined the New York City Battery Place station as a weather observer. Except for three years in New Orleans as head of the marine program, he remained in New York City until 1942. In that year, he was transferred to the Central Office's Station Operations Division, of which he later became Acting Chief. In 1948, Mr. Brotzman was appointed Chief of the

newly established Office of Plans and Program Management. He held this post until 1956, when he was promoted to Assistant Chief for Program Planning.

Mr. Brotzman attended Columbia University and George Washington University and received an Associate Degree in Public Administration from American University in 1952. He is a member of the American Meteorological Society and the American Geophysical Union.



### *Manager, Operations Division*

Charles G. Knudsen, Manager of the Operations Division, comes to his new post after nearly four years as Meteorologist in Charge of the New York Weather Bureau Office. A native of New York City, Mr. Knudsen graduated from St. John's University in 1936 and remained at the University as a fellow and instructor until 1941. He received a master's degree from Columbia University in 1939 and has done further graduate work at New York University.

Entering the Weather Bureau in 1942, Mr. Knudsen was assigned first to the Analysis Center and later to the Washington National Airport. He served in the U. S. Navy from 1943 to 1945 and then rejoined the Weather Bureau as a forecaster at LaGuardia Airport. In June 1948, he became Chief Airport Meteorologist at New York International Airport. Recalled to active Navy duty in 1952, Mr. Knudsen was assigned as an instructor in meteorology at the U. S. Naval Postgraduate School in Monterey, Calif. In 1954, he returned to the Weather Bureau, spending nearly a year in various assignments at the Central Office before his appointment as Meteorologist in Charge of the Weather Bureau's visibility project at Newark Airport. In 1956, he became Principal Assistant at the New York Weather Bureau Office.

Mr. Knudsen is a member of the American Meteorological Society, a Fellow of the New York Academy of Sciences, and a Commander in the U. S. Naval Reserve.



*Regional Meteorologist*

Silvio G. Semplicio is the new Regional Meteorologist, Scientific Services Division. Mr. Semplicio entered the Weather Bureau in 1946 as a forecaster in the International Aviation Unit, which was then located at LaGuardia Airport and later moved to Kennedy Airport. During his years with the Unit, he has participated in a number of special projects, including the development of the high-altitude forecast program for which he was awarded a Silver Medal. He served as a delegate to the 1959 WMO-ICAO conference in Montreal, is a member of the Weather Bureau Panel on the Utilization of Satellite Meteorological Data, and is the Chairman and United States member of the WMO Committee on the Utilization of Aireps. He has taught dynamical forecast techniques at New York University, where he is an adjunct professor of meteorology.

A graduate of New York University, Mr. Semplicio received a Bachelor of Aeronautical Engineering degree in 1940 and a master's degree in meteorology in 1943. From 1940 to 1946, he was in the Air Weather Service, serving as an instructor in meteorology at New York University, as staff weather officer to a combat wing in Europe, and as a research officer at New York University.



*Regional Hydrologist*

Richard M. Greening, Regional Hydrologist, has been Eastern Area Hydrologic Engineer since 1963. After serving with the Air Force from 1945 to 1947, Mr. Greening attended the University of Utah, graduating in 1951 with a B. S. in meteorology. He

joined the Weather Bureau as a meteorologist at the Cincinnati River Forecast Center and in 1952 was transferred to Fort Worth, where he became Assistant Area Hydrologic Engineer. In 1955, he moved to the Augusta River Forecast Center and was promoted to Assistant Hydrologist in Charge in 1956.



*Regional Climatologist*

In moving to RONY as Regional Climatologist, Norman L. Canfield is returning to the office where he entered the Weather Bureau. Mr. Canfield gained his first meteorological experience as an airway observer at Durham, N. H., while attending the University of New Hampshire. After graduating from the university in 1942 with a B.S. in mathematics, he took a special graduate course in meteorology at the Massachusetts Institute of Technology. From 1942 to 1945, he served as a meteorological officer in the U. S. Navy, forecasting for land-based aircraft and seaplanes engaged in antisubmarine operations.

At war's end, Mr. Canfield entered the Weather Bureau at the New York Regional Office, worked briefly at LaGuardia Airport and Concord, N.H., and then spent five years at the Weather Bureau Airport Station in East Boston, Mass., as a FAWS and aviation forecaster. In 1950, he completed an MIT graduate course in climatology and since then has concentrated on climatological work. After three years as leader of the unit that is now the Marine Section, Office at Climatology, he moved to the National Weather Records Center. There, he was project leader on the Marine Climatic Atlas of the World and in 1956 became supervisor of the Climatic Analysis Section. In 1964, Mr. Canfield received a master's degree in meteorology from the University of Michigan. He is a member of the American Meteorological Society and was chairman of the Asheville Chapter in 1963-64.

(continued)



*Regional User Services Representative*

The New York Regional User Services Representative is Anthony E. Tancreto, who has been Meteorologist in Charge of the Atlantic City Weather Bureau Airport Station for nearly 5-1/2 years. Mr. Tancreto has a bachelor's degree from Tufts University and a master's in meteorology from Massachusetts Institute of Technology. During World War II, he was a Navy Aerological Officer for three years, one of which he spent at MIT as a laboratory assistant in meteorology.

In 1946, Mr. Tancreto entered the Weather Bureau and was assigned to Bermuda under the "Hypo" project supported by the Air Transport Command. The years from 1948 to 1953 he spent working at the New York Weather Bureau Office. He then joined the ranks of the private meteorologists, providing forecasts tailored to the needs of business and industrial clients. In 1955, Mr. Tancreto returned to the Weather Bureau as a storm surge specialist at the Boston Weather Bureau Airport Station. While in Boston, he developed methods for forecasting the height of maximum surge and published two papers on his work.

*Biographies of other appointees in the New York Regional Office will appear in later issues of TOPICS.*

*Superior performance awards*

A superior performance award has been given to Robert S. Ingram, MIC at Burlington, Vermont.

Carl O. Bowser, Jr., Robert G. Cleis, Robert L. Curll, Patrick T. Dugan, Jr., Richard L. Lowery, and Edward A. Price, all of the Pittsburgh Weather Bureau Airport Station, received a group award for superior performance.

Another group award went to Eugene Ace, Samuel Grimm, Herman Jordan, Eugene Kilgore, and Silvio Simplicio, of the Weather Bureau Airport Station at John F. Kennedy International Airport.

The five men designed, tested, redesigned, and refined an improved inking well for making dashed lines needed in the production of facsimile charts.

*Luncheon for Charles F. Knudsen*

Top officials from the New York City administration, representatives of utility and industrial firms, radio and television weathercasters, and Weather Bureau employees attended a luncheon given for Charles G. Knudsen when he left the position of MIC at the New York WBO for his new assignment as Manager of the Operations Division, New York Regional Office.

**LENGTH OF SERVICE AWARDS  
NEW YORK REGIONAL OFFICE**

**40-YEAR AWARD**

Walter Richmond Hall  
WBAS Charleston, S.C.

Richard Fay  
RO New York

**35-YEAR AWARDS**

Domenic Grady  
WBAS Atlantic City

Robert E. Fleury  
WBAS Portland, Maine

Lester L. Levy  
WBAS Baltimore

Leonard T. Olson  
WBAS New York

John H. Quinlan  
WBAS Wilmington, Del.

Floyd C. Pate  
WBAS Greensboro, N.C.

George P. Schaefer  
AWP New York

**25-YEAR AWARDS**

Curtis Barton  
WBAS Youngstown, Ohio

William J. Coffey, Jr.  
WBAS Atlantic City

Dana Blandin  
FIU Philadelphia

Seward M. Donaldson  
WBAS Burlington, Vermont

Ralph M. Evans  
WBAS Raleigh

James M. Hand  
WBAS Washington, D.C.

Kathryn Korzelius  
WBAS Buffalo

Merle G. Kachenmeister  
WBAS Toledo

Helen E. Senter  
WBO Albany

Lawrence E. Niemeyer  
WBRS Cincinnati

**20-YEAR AWARDS**

William M. Beheler  
WBAS Roanoke, Va.

Maurice S. Powell, Jr.  
WBRS Wallops Island, Va.

Clyde H. Blackwood  
WBAS Nantucket, Mass.

Augustus W. Roche  
WBAS Nantucket

Robert C. Carpenter  
WBAS Columbia, S.C.

Ernest E. Schlatter  
WBRS Atlantic City

Wayne R. Cornell  
WBAS Winston-Salem, N.C.

Harold A. Scott  
WBAS Baltimore

Austin L. Deck  
WBAS Erie, Pa.

Donald L. Willson  
AWP New York

# NEWS from Region II

## Regional Office Appointments Announced

On December 30, Dr. White announced the following appointments to key positions in the Fort Worth Regional Office:

- Regional Director—Wilmer L. Thompson
- Regional Administrator—to be announced later
- Regional Meteorologist—Woodrow W. Dickey
- Regional Hydrologist—Richard J. MacConnell
- Regional Climatologist—C. K. Vestal
- Regional User Services Representative—Carl M. Reber
- Head, WXAP Branch—John A. Riley, Jr.
- Head, DATAC Branch—Hoye S. Dunham
- Assistant Meteorologist for Techniques Improvement—to be announced later
- Public Service Operations Meteorologist—Robert M. Ferry
- Aviation Service Operations Meteorologist—Joe M. Sassman
- Service Operations Evaluation Meteorologist—Harold S. McCrabb
- Regional Radar Meteorologist—Robert L. Smith



### Regional Meteorologist

The Regional Meteorologist at Fort Worth is Woodrow W. Dickey, who for the past eight years has been research forecaster at Seattle. After serving as a weather officer in the Army Air Corps (1944-47), Mr. Dickey joined the Weather Bureau in 1947 as a research meteorologist at the Central Office. From 1949 to 1956, he was research forecaster at Denver, and in 1956 went to the Seattle office.

Mr. Dickey has a B.A. degree in meteorology from UCLA (1947) and an M.A. degree in meteorology from the University of Washington (1960). He is a member of the American Meteorological Society and Sigma Xi.



### Regional Hydrologist

Richard J. MacConnell, the new Fort Worth Regional Hydrologist, remains at the same office where he has been since 1947 as Regional Hydrologic Engineer and South Central Area Hydrologic Engineer. He entered the Weather Bureau in 1940 as river forecaster at Pittsburgh, where he served until 1947.

Mr. MacConnell has a civil engineering degree from Cornell University. Prior to joining the Weather Bureau, he worked for the U. S. Geological Survey and the U. S. Forest Service in Pennsylvania.

A member of the American Society of Civil Engineers, the American Meteorological Society, and the American Geophysical Union, Mr. MacConnell represents the Department of Commerce on the Arkansas-White-Red Basins Inter-Agency Committee.



### Regional Climatologist

C. K. Vestal, the new Fort Worth Regional Climatologist, has been with the Weather Bureau since 1937, when he served as a junior observer at Greensboro, North Carolina. He was an observer and airway forecaster at Arlington, Virginia, and at Washington National Airport, before moving to New York City, where he was in charge of a special statistical tabulation project for the Air Force. From 1943 to 1956, he held various positions in the Central Office Climatological Division, except for the period from 1950 to 1952 when he worked for the State Department as a foreign service officer in Liberia, West Africa. While there, he established climato-

logical stations and airway observing points, and trained Liberian nationals in equipment operation and observing procedures. When he returned to the Weather Bureau in 1952, Mr. Vestal received a special commendation from the President of Liberia.

Stationed in Fort Worth since 1957, Mr. Vestal was Area Climatologist for the Southeast and Southwest Areas until 1963, and for the Southeast Area since then.

He has a B.A. degree in physics from Guilford College, North Carolina, and has done graduate work at the University of Maryland, Florida State University, and Texas Christian University. He is a member of the American Meteorological Society, the American Statistical Association, and the Institute of Mathematical Statistics.



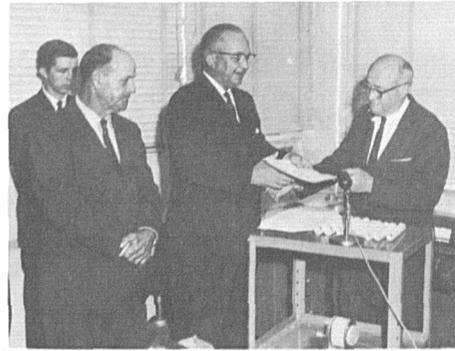
#### *Regional User Services Representative*

The Regional User Services Representative at Fort Worth is Carl M. Reber, who comes to his new position after serving as head of the Research Flight Facility, Miami, since 1960. He joined the Weather Bureau in 1937 at Austin, Texas, and subsequently served at Springfield, Mo.; Kansas City; and the Central Office. From 1958 to 1960, he was Operations Manager of the National Hurricane Research Project.

In 1957, he was awarded the Department of Commerce Silver Medal for outstanding contributions to the aviation weather service and in 1962 was among those recognized by a Commerce Gold Medal for exceptional service in performance of research flights in Hurricane Carla.

A member of the American Meteorological Society and the Institute of Aeronautical Sciences, he has published articles in the *AMS Bulletin* and various aviation journals.

*Biographies of other appointees in the Fort Worth Regional Office will appear in later issues of TOPICS:*



Baton Rouge MIC Frank Hood (right) presents a Weather Bureau special service award to Mayor Jack Christian of East Baton Rouge Parish, for assistance rendered by city employees during Hurricane Hilda. Looking on are two other award recipients, James Kimbell of the Baton Rouge Amateur Radio League and T. H. Falcon, general maintenance superintendent at the Baton Rouge airport.

#### *Radar meteorologist locates lost plane*

About sunset on November 24, the Flight Service Station at Lafayette, La., asked the help of the Lake Charles Weather Bureau radar in attempting to locate a lost aircraft. Working with the local control tower operators, Claude R. Allen, Weather Bureau radar meteorologist, found the plane on radar and identified it by various turns made at the direction of the control tower. The pilot was guided to a safe landing at Welsh, La.

#### *FAA men honored for aiding Weather Bureau*

Three FAA employees in Baton Rouge, La., were given Weather Bureau special service awards, "in recognition and appreciation of significant public services rendered with respect to outstanding cooperation and support to the Weather Bureau, Baton Rouge, Louisiana, during Hurricane Hilda on October 3 and 4, 1964."

Shelby F. McCurnin, Air Traffic Control Specialist, was cited for contacting the New Orleans Flight Control Center and obtaining the radar position of a hurricane hunter plane which was flying into the eye of the hurricane near Baton Rouge. Mr. McCurnin made the contacts voluntarily after the tower had been abandoned because of dangerously high winds. Through his efforts, the Weather Bureau was able to track the progress of the storm, although the Bureau radar was inoperative.

Jerome A. Spinato and James H. Taylor of the FAA Systems Maintenance Branch assisted Weather Bureau electronic technicians in attempting to obtain emergency power for the radar.

These awards—and 13 others given to local Government agencies and public utilities for their cooperation during the hurricane—were presented by Frank Hood, MIC at Baton Rouge, in a ceremony on October 30.

**LENGTH OF SERVICE AWARDS**

**Fort Worth Regional Office**

**35-YEAR AWARDS**

Joseph J. V. Dobry  
WBAS Wichita Falls, Tex.

Thomas L. Gibson  
WBAS Amarillo

Berl L. Henry  
WBAS Chattanooga

**25-YEAR AWARDS**

Frederick W. Clark  
WBAS Atlanta

Frank W. Eldred  
WBAS Albuquerque

Delmar L. Gifford  
RO Fort Worth

Rodney C. Hardy  
WBAS Miami

**20-YEAR AWARDS**

Carl P. Arrington  
WBAS Atlanta

John G. Boyd  
NHC Miami

Randall M. Fuller  
RO Fort Worth

James S. Klazynski  
WBAS Memphis

Stephen A. McHorse  
WBAS Amarillo

Harold S. Richards  
WBAS Fort Worth

**15-YEAR AWARDS**

Dorus D. Alderman  
WBAS Victoria, Tex.

Thomas L. Kirkpatrick  
WBAS Galveston

Nicholas J. Ropar  
WBAS Albuquerque

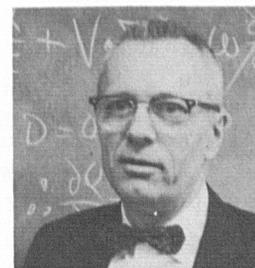
Service Operations Evaluation Meteorologist—to be announced later  
Regional Radar Meteorologist—Norman E. Prosser



*Manager, Operations Division*

Charles M. Woffinden, the Manager of the Operations Division, joined the Weather Bureau in 1939 at Salt Lake City and worked at Honolulu before entering the Navy in 1942. After serving at the Fleet Weather Central, Pearl Harbor, he returned to the Bureau at Honolulu, where he became Meteorologist in Charge of the Weather Bureau Airport Station. In 1954, he came to the Central Office to work in the Extended Forecast Section. At the time of his recent appointment, he was head of the Forecast Branch in the Extended Forecast Division at the National Meteorological Center.

Mr. Woffinden has a bachelor's degree in physics from the University of Utah (1937) and a master's degree in meteorology from U.C.L.A. (1941). He attended U.C.L.A. on a Weather Bureau scholarship during the academic year 1960 to 1961 and again was assigned to that university in 1962 and 1963 to conduct research on rainfall processes in connection with the California Rainfall Project. Except for his thesis (which is in progress), he has completed requirements for the Ph.D. degree at U.C.L.A. He is a member of the AMS.



*Regional Meteorologist*

The new Kansas City Regional Meteorologist is Lawrence A. Hughes, who began his career in me-

**NEWS** from Region III

*Regional Office Appointments Announced*

On December 30, Dr. White announced the following appointments to key positions in the Kansas City Regional Office:

- Regional Director—Roy L. Fox
- Regional Administrator—to be announced later
- Manager, Operations Division—Charles M. Woffinden
- Regional Meteorologist—Lawrence A. Hughes
- Regional Hydrologist—Verne Alexander
- Regional Climatologist—Robert F. Dale
- Regional User Services Representative—Arthur H. Hosick
- Head, WXAP Branch—Robert C. Baskin
- Head, DATAC Branch—Alfred A. Skrede
- Assistant Meteorologist for Techniques Improvement—to be announced later
- Public Service Operations Meteorologist—to be announced later
- Aviation Service Operations Meteorologist—Howard R. Martin

teorology while serving in the Army Air Corps. He attended the weather observer school at Chanute Field, Illinois, in 1941, and then taught in the school. Later he completed the weather forecasting course at Chanute Field and spent two years as an aviation forecaster at Gunter Field in Montgomery, Alabama.

He joined the Weather Bureau briefly in 1946 as a weather observer but left to attend the University of Chicago, where he received a Master of Science degree in 1951. He taught synoptic meteorology at the university before becoming Research Forecaster at the Chicago Weather Bureau in 1955.

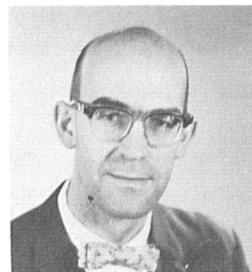
A professional member of the American Meteorological Society and a member of Sigma Xi, Mr. Hughes has published several articles in the *AMS Journal and Bulletin* and in the *Monthly Weather Review*.



#### *Regional Hydrologist*

Verne Alexander, Regional Hydrologist, has been located at Kansas City since 1940 and has served there as Hydrologic Supervisor, Regional Engineer, and North Central Area Engineer.

After receiving his B.S. degree in Civil Engineering from Missouri University (1930), he worked for the U.S. Geological Survey in Florida, New York, and Oklahoma, before transferring to the Weather Bureau in 1940. He is a member of the American Society of Civil Engineers and the American Geophysical Union and is Department of Commerce representative on the Missouri Basin Inter-Agency Committee. He also serves as Commerce representative on the Niobrara and Blue River Compact Commissions and the Comprehensive Basin Planning Committees for Missouri and Upper Mississippi River Basins.



#### *Regional Climatologist*

The new Regional Climatologist is Robert F. Dale. A native of Nebraska, Dr. Dale has a B.S. degree in meteorology from the University of Chicago (1943) and an M.S. degree (1948) and Ph.D. degree (1964) in agricultural climatology from Iowa State University. After serving with the U.S. Air Force as a weather officer during World War II, he joined the Weather Bureau to head the Agricultural Climatology section (Central Office) during 1947 and 1949. Since that time, he has worked as Territorial Climatologist for Alaska, Assistant MIC at the Weather Records Processing Center at San Francisco, California State Climatologist, and most recently as Area Climatologist for the central United States.

A member of Gamma Sigma Delta and Sigma Xi and a professional member of the American Meteorological Society and American Society of Agronomy. Dr. Dale received the Department of Commerce Silver Medal for Meritorious Service in 1962.



#### *Regional User Services Representative*

Arthur H. Hosick, the new Regional User Services Representative, joined the Weather Bureau as a junior observer at Omaha, Nebraska, in 1940. He also served at the Analysis Center in Washington, before entering the military. He later worked at Seattle as an aviation forecaster before going to Cheyenne as principal assistant and then MIC, a position he held until his recent appointment.

He served as a meteorologist in the military during World War II and again during the Korean war. A professional member of the AMS, he also belongs to the American Association for the Advancement of Science and the Colorado-Wyoming Academy of Science. He has a degree in physics from Nebraska Wesleyan University (1940) and also has taken courses at New York University.

*Biographies of other appointees in the Kansas City Regional Office will appear in later issues of TOPICS*

### *Cold spells named after men*

William L. Denmark, Illinois State Climatologist, reports that a gas company in that state is using men's names to identify severe cold spells. According to the company, it is labeling the chilly spells with men's names in deference to all the women who use natural gas for their many chores—from cooking to drying clothes.

## LENGTH OF SERVICE AWARDS

### Kansas City Regional Office

#### 35-YEAR AWARDS

George R. Borders  
WBAS Ypsilanti

Roy F. Miller  
WBAS Denver

Alois G. Topil  
WBAS Denver

#### 25-YEAR AWARDS

Frank I. Branthaver  
WBAS Springfield, Ill.

Lars C. Christensen  
WBAS Springfield, Ill.

Marcus M. Dunlap  
WBAS Muskegon, Mich.

Burton Handy, Jr.  
WBO Kansas City

John Holstein  
RO Kansas City

George B. Hummer  
WBAS Topeka

Finn A. Johnson  
WBAS LaCrosse

Ruth R. Jones  
WBRO Kansas City

Clayton E. Moe  
WBAS Minneapolis

Fred R. Mueller  
WBO Marquette, Mich.

Kenneth A. Nicolson  
WBAS Duluth

#### 20-YEAR AWARDS

Neil M. Coulter  
WBAS Pueblo

Robert H. Dickson  
RFC St. Louis

Alois M. Huber  
WBAS Omaha

Eugene P. Remington  
WBAS Springfield, Ill.

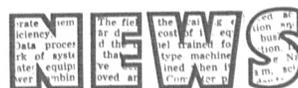
#### 15-YEAR AWARDS

Jewell B. Holleyman  
WBFC Chicago

Maynard L. Renfrow  
WBAS Sioux City

Devore H. Silvey  
WBAS Lincoln

William E. Williams  
WBAS St. Louis



*from Region IV*

### *Regional Office Appointments Announced*

On December 30, Dr. White announced the following appointments to key positions in the Salt Lake City Regional Office:

Regional Director—Hazen H. Bedke  
Regional Administrator—Hugh D. Spangler  
Manager, Operations Division—Orvil R. Warner  
Regional Meteorologist—to be announced later  
Associate Regional Meteorologist (San Francisco)—Jack C. Thompson

Regional Hydrologist—Jerome van de Erve  
Regional Climatologist—Marvin D. Magnuson  
Regional User Services Representative—Lloyd H. Magar

Head, WXAP Branch—Halbert E. Root  
Head, DATAC Branch—Harry L. Elser  
Assistant Meteorologist for Techniques Improvement—Philip Williams

Public Service Operations Meteorologist—to be announced later

Aviation Service Operations Meteorologist—Charles W. Inskip

Service Operations Evaluation Meteorologist—Chester L. Glenn

Regional Radar Meteorologist—Herbert P. Benner



### *Regional Administrator*

Hugh D. Spangler, the new Regional Administrator, has been Regional Administrative Officer of Region Four since 1952. He joined the Weather Bureau in Bismarck, North Dakota, in 1926, and served at Lander, Cheyenne, Billings, Boise, Spokane and Seattle, before going to Salt Lake City. He had a special assignment for the Reconstruction Finance Corporation in 1942, when he worked as chief meteorologist for a rubber development corporation in the Amazon Valley.

A professional member of AMS, he also belongs to various pilot associations. He has attended Notre Dame, Boise Junior College, and the University of Washington.



*Manager, Operations Division*

The Manager of the Operations Division, Orvil R. Warner, comes to his new position after four years as *Meteorologist in Charge* at WBAS Salt Lake City. A native of Utah, Mr. Warner has a B. S. degree from Brigham Young University (1941) and has done graduate work in meteorology at UCLA. From 1942 to 1946, he served in the Air Weather Service, including duty as regional air inspector and squadron commander. Joining the Weather Bureau at Seattle in 1946, he has held various regional office supervisory positions and has been State Climatologist for Utah and Nevada.

A licensed private pilot, he is active in the Air Force Reserve with the rank of Colonel. He is a professional member of the AMS, a member and past president of the Federal Executives Association for Utah, and a meteorology member of the Advisory Council to the College of Mines and Mineral Industries of the University of Utah.



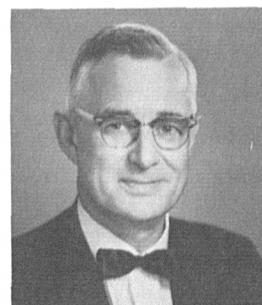
*Associate Regional Meteorologist (San Francisco)*

In his new position as Associate Regional Meteorologist at San Francisco, Jack C. Thompson pro-

vides scientific support for the fire-weather, fruit-frost, and marine forecast programs. He also conducts liaison with other scientific groups on the Pacific Coast.

Joining the Weather Bureau in 1929, he served as observer, fire-weather observer, fruit-frost forecaster, district forecaster, and research forecaster at various California stations. From 1950 to 1953, Mr. Thompson was a research meteorologist in the Central Office and then returned to California as MIC at Los Angeles. He came back to Washington in 1955 to serve in the Office of Meteorological Research. Most recently he was head of the Office of Planning.

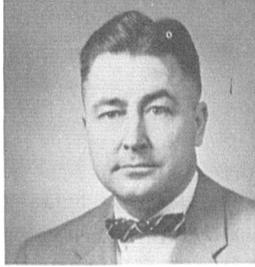
In 1955, Mr. Thompson was awarded a Department of Commerce Silver Medal for Meritorious Service. A member of the Washington Academy of Sciences, the American Geophysical Union, and Sigma Xi, he has a degree in meteorology from U.C.L.A.



*Regional Hydrologist*

Jerome van de Erve, the new Regional Hydrologist, has a B.S. degree in civil engineering from Clemson University and considerable graduate credit at the State University of Iowa. Entering the Weather Bureau in 1931 at Tampa, Florida, he worked at Montgomery, the Central Office, Phoenix, Davenport, Iowa City, San Francisco, Macon, Seattle, and Sacramento. He has filled positions as hydrologic supervisor, regional engineer, and most recently as Western Area Hydrologic Engineer.

During World War II, he served in the Army with the Chemical Warfare Board. Currently, he is a fellow in the American Society of Civil Engineers and a member of the American Geophysical Union. He is Department of Commerce member of the main Pacific Southwest Interagency Committee and also serves on technical subcommittees. In addition, he is Commerce advisor to the California-Nevada Compact Commission.



#### *Regional Climatologist*

The Regional Climatologist, Marvin D. Magnuson, brings to his new position more than 18 years of experience in climatology. Joining the Weather Bureau as climatologist and principal assistant at Des Moines, Iowa, in 1946, he has been MIC and climatologist at Huron, S. Dak., and Northwest Area Climatologist at Seattle.

Mr. Magnuson was a weather officer in the Army Air Force during World War II and before that was a statistician with the Department of Agriculture. A professional member of the AMS, he has a B.A. degree from Nebraska Wesleyan University (1939) and has done graduate work at the University of Nebraska and Massachusetts Institute of Technology.



#### *Regional User Services Representative*

The Regional User Services Representative is Lloyd H. Magar, who has been MIC at Sacramento since 1950. He entered the Weather Bureau in 1930 at Lander, Wyo., and subsequently was assigned to Rock Springs and Billing. During World War II, he was a regional control officer with the Air Weather Service. From 1946 to 1950, he served in the Central Office.

A professional member of the AMS, Mr. Magar has attended the College of Emporia, Billings Polytechnic Institute, American University, and has taken special courses at the University of Miami and the University of St. Thomas.

*Biographies of other appointees in the Salt Lake City Regional Office will appear in later issues of TOPICS*

#### *Forecaster assists record soaring flight*

Eugene H. Larcom, a forecaster at Seattle-Tacoma Airport, has been commended by soaring pilot Cecil M. Craig for the weather support he provided to a record-breaking flight. Mr. Craig's flight to 31,000 feet established four state soaring records, won the Symonds Memorial Trophy, and earned him the Soaring Society diamond for altitude, one of soaring's most coveted awards.

#### *Suggestion awards*

Cash awards for employee suggestions have been given to Dorothy J. Nelson, WBRO, Salt Lake City; Dean C. Hirschi, WBAS Salt Lake City; and Louis D. Ranney, WBAS, Salt Lake City.

#### *Fog seeding*

Cloud-seeding techniques are being used with some success to disperse fog at airports where persistent air mass fogs may tie up airline operations for days or perhaps even weeks at a time. One of the early applications in the United States was an experiment in the winter of 1961-62, in which United Airlines hired Intermountain Weather—a local, private meteorologist—to operate a small plane above a fog layer over the Salt Lake City Airport and dispense crushed dry ice along the length of the main instrument runway. Results were very encouraging, and the experiment was tried a number of times the next winter with improved equipment, resulting in some very spectacular successes and other cases with little noticeable effect.

Results were good enough in early tries that this year a number of cities are setting up programs for fog dispersal with the cooperation and financial assistance of various airlines and aircraft operators. Fog seeding programs are under way this winter at Salt Lake City, Medford, Spokane, Boise, and Portland, as well as at certain military bases and perhaps at other locations.

Conditions suitable for dispersal of fog are rather special, and these conditions are met only in a few places. The fog must be made up of supercooled water droplets at a temperature several degrees below the freezing point in order that ice crystals may form and grow when the dry ice is dropped. Under favorable conditions, the dry ice produces tiny ice

crystals which then grow into snow particles at the expense of the fog droplets. At times, falling snow may reduce the visibility temporarily to lower than it had been prior to seeding. However, the falling snow removes the excess moisture, leaving a cleared space or "hole" in the fog. If the clearing is over a runway, planes are able to land and take off; but unless the air is still, the cleared space may drift away from the runway and will have to be renewed.

**LENGTH OF SERVICE AWARDS**

**Salt Lake City Regional Office**

**35-YEAR AWARDS**

John B. Lightfoot  
WBAS Seattle

Lloyd H. Magar  
RO Salt Lake City

**30-YEAR AWARDS**

Ivan F. Ellis  
WBAS Portland, Oreg.

James K. Ohligschlager  
WBAS Las Vegas

**25-YEAR AWARDS**

Aubrey J. Bentley  
WBAS Tucson

E. Ford Dicks  
WBAS Olympia

Howard E. Hybskmann  
WBAS Pocatello

John H. Selmsier  
WBAS San Francisco

**20-YEAR AWARDS**

Howard Albrethson  
WBAS San Francisco

Kenneth E. Aurelio  
WBAS Seattle-Tacoma

Dale O. Collins  
RO Salt Lake City

Herbert L. Eger  
WBAS Tucson

Russell B. Hanns  
WBAS San Francisco

Maynard L. Rogers  
WBAS Salem

Rober E. Todd  
WBAS Salt Lake City

**15-YEAR AWARDS**

George O. Bonawit  
WBAS San Francisco

Walter L. Gibson  
WBAS Meacham

James J. McCoy, Jr.  
WBAS Boise

William C. Melendy  
WBAS Astoria

Frederick E. Schramm  
WBRS Las Vegas

Gladys S. Searles  
WBAS Phoenix

David E. Sudweeks  
WBRS Las Vegas

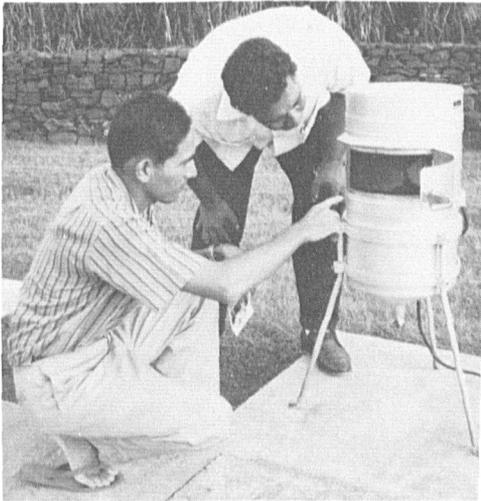
**NEWS** from Region V



On January 14, Weather Bureau officials received the keys to a new \$30,000 office building at Barrow, Alaska. The new office replaces a quonset hut that has housed Bureau operations for many years. Jim Harding (holding the keys) is Technician in Charge at Barrow, and George H. Luetkehans (right) is Facilities Chief at the Anchorage Regional Office. At left are Howard Peoples and Dick Dinneen, employees of the Bureau of Indian Affairs which constructed the building. The photographer, Philip Gardner of the Regional Office, couldn't get a picture of the new office, because the sun didn't rise at Barrow until January 22.

*Satellite workshop*

A Tropical Satellite Meteorology Workshop, sponsored by the Weather Bureau, the University of Hawaii, and the local AMS chapter, was held at the University of Hawaii on December 17 and 18. V. J. Oliver, L. F. Hubert, L. F. Whitney, Jr. and Captain R. W. Fett, of the National Weather Satellite Center, instructed approximately 35 civilian and military meteorologists who attended the workshop.



Truk TIC Aki Kimura (left) displays the rain gage to Chief Anter Eko, Weather Bureau rainfall observer on Ta Island.

*“Chief” visits weather station*

It’s not every day that a Weather Bureau station is visited by the Chief of a South Sea Island—even when the station is *on* a South Sea Island. Last November, Chief Anter Eko of Ta Island, Satawan Atoll, in the Truk district of the Eastern Caroline Islands, visited Weather Bureau facilities on Truk to inspect the “latest” thing in weather instruments. The Chief, who is the Weather Bureau’s rainfall observer on Ta Island, was especially intrigued with the tipping bucket rain gage. He had been keeping rainfall records for almost a year, but this was the first time he had seen a fully equipped station.

*Eniwetok returns to normal*

On Eniwetok, the westernmost atoll of the northern Marshalls, nine Weather Bureau employees provide meteorological support for the Pacific Missile Range.

Six years have passed since this tropical atoll was blasted and burned by nuclear tests. Once again, the atoll is capable of supporting vegetation, which is now starting to grow. Fish and birds are back, and there are as many rats as the food supply will allow.

A group of scientists headed by Dr. Lauren R. Donaldson, director of the University of Washington’s Laboratory of Radiation Biology, has concluded that even though the bombed islands are now safe, a continued buildup of large amounts of radiation and exposure would be highly dangerous to mankind. The scientists now have evidence of the tremendous power of nature to restore itself to a normal stage of balance.

*Pacific island grows*

Johnston Island, lying near the heart of the trade wind zone in the east-central tropical Pacific, is controlled by the Air Force, but several Federal agencies have employees there—all in bachelor status. The six man Weather Bureau staff has had the opportunity to watch the island grow during the past two years. Johnston Island now covers 595 acres, or approximately ten times its area when it was discovered in 1796. Two years ago, the Weather Bureau facility was at the water’s edge. Today, it is 1000 feet inland—without moving!

The island’s growth is the result of dredging and filling over the years, but recently these operations were stepped up to prepare for any future resumption of weapons tests. Five dredges were brought in from as far as Trinidad, Japan, the Bahamas, and the Persian Gulf to dredge some 16 million cubic yards of coral and triple the size of the island at a cost of 27.7 million dollars.

**LENGTH OF SERVICE AWARDS**

**Honolulu Regional Office**

**15-YEAR AWARDS**

John W. Hertel  
WBO Yap, T.T.

Takase R. Hiyane  
WBAS Honolulu

Chester T. Kainuma  
WBAS Hajuro, T.T.

Marian K. Kealoha  
WBAS Honolulu

Noboru Miyashiro  
RO Honolulu

# Length of Service Awards

## CENTRAL OFFICE

### 35-YEAR AWARDS

Harold Cole  
Tech. Dev. Lab.  
Mildred McCollum  
Comm. Div.  
Joseph Paulhus  
Hydro.

### 25-YEAR AWARDS

John Blain  
Nat'l Met. Servs.  
Frank Burnett  
NMC  
George Gadea  
Fac. & Main.  
Hugo Goodyear  
Hydro.  
Harry Hawkins  
NHRL Miami  
Hans Jensen  
Equip. Dev. Lab.

Donald Jorgensen  
Systems Dev.

Margaret Paroni  
Off. of Planning

Edna Wynkoop  
DATAC

### 20-YEAR AWARDS

Perry Edge  
Adm. Oprs.

Andrew Husser  
Pers.

Edna King  
Adm. Oprs.

Catherine M. LaSota  
Finance Branch

Isaac Small  
Adm. Oprs.

Alma West  
Library

### 15-YEAR AWARDS

Ernestine Buchanan  
Climat.

Edwin Flowers  
Met. Res.

Elizabeth A. Koster  
Adm. Oprs.

Arthur LaJoie  
NMC

Joseph Mullaney  
NMC

Gerald Peterson  
Systems Dev.

An E. Purdy  
NMC

Dorothy M. Rochlin  
WXAP

Roger Watkins  
Hydro.

Emanuel Zisseron  
NWSC

## National Weather Records Center Asheville, North Carolina

### 30-YEAR AWARD

Raymond L. Joiner

### 25-YEAR AWARD

Joseph W. Bailey

### 20-YEAR AWARDS

Lewis A. Blodgett, Jr.

Gladys D. Gossett

Howard F. Harper

Betty S. Harrell

Eugene J. Masson

Vernon Wiggins

### 15-YEAR AWARDS

Bynum E. Carson

Teodulo S. Diaz

Herbert Rash

# Retirements

## AMERICO MALDONADO.

a Meteorological Technician at WBAS San Juan, Puerto Rico, retired November 30 after 42 years of Federal service. Mr. Maldonado joined the Weather Bureau as an Apprentice in 1923. He spent his entire Weather Bureau career at San Juan. Mr. Maldonado's address is P.O. Box 5033, Puerta de Tierra, Puerto Rico.

## KENNETH W. MATTHEWS.

a Meteorological Technician at WBAS Tulsa, Okla., retired on December 24 after 30 years of Federal service. Mr. Matthews joined the Weather Bureau as an Airways Observer at Wichita, Kans., in 1931. He also served in Dodge City, Kans.; Green Bay, Wis.; Ely, Nev.; Pampa, Tex.; and El Paso, Tex. He transferred to Tulsa in 1951. Mr. Matthews' address is 1532 N. Kingston Place, Tulsa, Oklahoma.

# Retirements

## **LYLE F. HAIGHT,**

a Meteorological Technician at WBAS Helena, Mont., retired December 7 after 24 years of Federal service. Mr. Haight joined the Weather Bureau in Butte, Mont., as a Junior Observer in 1940. He also served at Savannah, Ga.; Atlanta, Ga.; Hatteras, N.C.; and Great Falls, Mont. He transferred to Helena in 1951. Mr. Haight's address is 2005 Villard Avenue, Helena, Montana.

## **ROY J. McCLURG,**

MIC at Valdosta, Ga., retired December 5 after 41 years of Weather Bureau service. Mr. McClurg joined the Bureau as an Assistant Observer at Saginaw, Mich., in 1923. He also served in Moorhead, Minn.; Oklahoma City, and Tulsa, Okla. He was named Meteorologist in Charge at Valdosta in 1955. Mr. McClurg's address is 714 Azalea Circle, Valdosta, Georgia.

## **JOHN J. TAMBORELLE,**

a Personnel Staffing Specialist in the Central Office's Placement Section, retired December 18 after 27 years of Federal service. Mr. Tamborelle joined the Weather Bureau as a Junior Stenographer in 1939 after serving with the Civilian Conservation Corps and Civil Aeronautics Authority. His entire Bureau career was spent at the Central Office. Mr. Tamborelle's address is 1822 Lamont Street, N.W., Washington, D.C.

## **SIDNEY S. JACOBSON,**

a Scientific Illustrator in the Graphic Arts Branch at the Central Office, retired December 30 after 22 years of Federal service. Mr. Jacobson came to the Bureau from the Navy Department in 1947. He served his entire Weather Bureau career at the Central Office. Mr. Jacobson's address is 2900 Erie Street, S.E., Washington, D.C.

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# Deaths

## **SARAH O. HENKORA,**

a Meteorological Technician at WBAS Pendleton, Oreg., died December 5, 1964. Mrs. Henkora joined the Weather Bureau at Seattle in 1942. She transferred to Pendleton in 1943, where she remained for the rest of her Bureau career. Mrs. Henkora is survived by her brother, D. W. Oothoudt, of 12809 Highway No. 5, Hopkins, Minnesota.

## **MABEL RANUM,**

formerly of the Communications Unit at WBAS Denver, Colorado, died November 30, 1964. Miss Ranum worked for the Bureau at Denver from 1951 to 1954 and from 1955 to 1961, at which time she transferred to the Federal Aviation Agency. She worked in the FAA Denver Flight Service Station until her retirement last year.

## **RICHARD L. BARNDT,**

a Meteorological Technician at WBRS Las Vegas, died December 10, 1964. He entered the Weather Bureau at Las Vegas in June 1964. An Air Force

veteran, Mr. Barndt is survived by this mother, Mrs. Mildred G. Barndt, Box 444, Columbus, Mont.

## **EDWARD A. OSLIN,**

a Meteorological Technician at WBAS Jacksonville, died December 26, 1964. A veteran of the U.S. Air Force, he joined the Bureau at Jacksonville in 1962. He is survived by his wife, Mrs. Eileen Oslin, and three daughters, of 6246 Lanczyk, Jacksonville, Florida.

## **H. JAMES BYERLY, JR.,**

a Meteorological Technician at the National Weather Records Center in Asheville, died October 5, 1964. An Army veteran, Mr. Byerly worked for the Post Office Department for a time before joining the Weather Bureau in Asheville as a Meteorological Aid in 1952. He rejoined the Post Office Department in 1956 and returned to the Weather Bureau at NWRC in 1958. Mr. Byerly is survived by his wife, Lillie L. Byerly, and three children, of 131 Hillside Street, Asheville, North Carolina.

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# TOPICS

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Vol. 24 No. 2

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*Editor*

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**Charles G. Thomas**

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**Clifton E. Holsapple, Fort Worth**

**Harold C. McComb, Kansas City**

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**James M. Beall, Anchorage**

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THE COVER: Among the tornadoes that struck the Nation on April 11 was this unusual twin funnel near Elkhart, Indiana, photographed by Paul Huffman of The Elkhart Truth.

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1965

# EDITORIAL ...

## Forecast Responsibility and Changing Technology

--- Robert M. White

In recent months, the Office of National Meteorological Services has introduced several innovations in forecasting procedures for the field service. One of these innovations authorized the use of products prepared at the National Meteorological Center as basic forecast material for the longer time periods. This change was made after careful evaluation of the computer product as compared with similar products that can be prepared subjectively.

Naturally, we have been hearing from our forecasters. Some see in this move a decrease in their responsibility. Others feel that they can still issue a better product subjectively.

I have no doubt that there are many forecasters in the service who can better the centrally prepared product. I also have no doubt that there are many more who cannot. We feel that the product prepared by the National Meteorological Center provides accuracy levels equivalent to those obtainable subjectively throughout the organization as a whole. Therefore, we should seek to devote the scarce professional talents of our field staff to those critical functions which the National Meteorological Center cannot perform or perform as well as the on-the-spot forecaster, and to those problems involving service to our growing lists of customers.

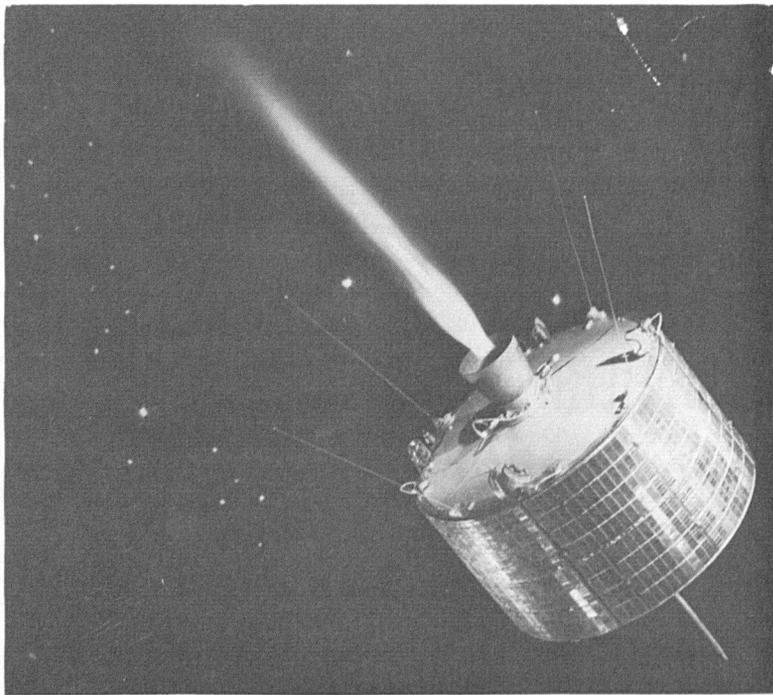
We must always seek ways of using new techniques which become available and hoard the scarce and indispensable talents of our professional staff for critical tasks only they can perform. Meteorology is evolving rapidly and better methods of analysis, observation, and forecasting are continually being developed. Even the newest among us has seen dramatic changes in forecast techniques and procedures. Long ago, it became evident that the forecaster himself did not need to plot the maps he analyzed. With facsimile, the forecaster recognized that it was no longer necessary to analyze the maps on which he based his forecasts. Today, we have at our disposal powerful new tools for dynamical forecasting—tools which permit centralized prediction for the longer time periods. We are fortunate in having them at this particular time. The population of the Nation is expanding, and the demands for weather service are becoming more varied and more urgent. Weather Bureau forecasters now can devote more time to local weather prediction and to refining their predictions to serve the specific needs of the users of weather information.

I cannot foresee that technological innovations will bring any decrease in the Bureau's needs for the highest level of professional competence in our field forecasters. On the contrary, the combination of advancing technology and rapidly growing weather service requirements is having exactly the opposite effect. The required level of technical competence for our field staff is rising.

As the functions of our field staff change, so do the yardsticks by which we judge responsibility. In future, the grades of our forecasters will depend on the variety and difficulty of the scientific and service problems they encounter. To the extent that area and time encompassed by forecasts is evidence of such variety and difficulty they will be considered as factors. The range and complexity of the forecast problems will be determined by the needs of the segments of the public being served.

No forecaster in the Weather Bureau need fear that his job or career will be adversely affected by any technological changes on the horizon. You are too scarce, too valuable, too vital in providing for the safety and well-being of your community. Final decisions on weather forecasts and warnings must remain in the hands of professionally qualified meteorologists in the field.

The Weather Bureau's greatest asset is its professional staff. But the professional staff must learn to use the tools and products of our advancing science. Only in this way will the Nation be served with the finest, most modern weather services. ■



# Weather Satellites of the Future

by  
*TIROS Operational Satellite Systems Engineering  
Division, National Weather Satellite Center*

Synchronous equatorial spacecraft, like this Syncom, hold promise for combining the functions of meteorological observations and communications. Syncoms are launched with Thor-Deltas and are roughly comparable to TIROS in cost.

Five years have elapsed since the first TIROS was launched on April 1, 1960. Since then, ten meteorological satellites—nine TIROS and one Nimbus—have been successfully orbited. Their television and infrared sensors have observed and recorded the earth's cloud cover on an unprecedented scale. The APT, or Automatic Picture Transmission, system tested on TIROS VIII and Nimbus I has vividly demonstrated both practicality and worth.

As impressive as these achievements have been, they are in a sense only the beginning. For meteorology is now married to space technology . . . and space technology is perhaps the fastest moving of all the technologies. As it grows, it will make possible a succession of advancements in man's ability to use satellites to observe the atmosphere and to communicate these observations, in the form of raw or refined data, to meteorological activities throughout the world.

The latest TIROS, launched by NASA from Cape Kennedy on January 22, 1965, represents an important step toward this increased utility of satellites for meteorological purposes. This spacecraft, TIROS IX, was rocketed into a near-polar orbit using a conventional Thor-Delta booster. As a result of this orbit, the first ever achieved by a satellite launched from the Eastern Test Range, the spacecraft is able to overfly and, illumination permitting, bring the entire surface of the earth within view of its television cameras every day. The vastly expanded coverage made possible by this orbit

was quickly reflected in the Weather Bureau's neph-analyses.

TIROS IX not only pioneered the first quasi-polar-orbit flight for that type satellite, it also accidentally made possible pictures of the earth from altitudes greater than any reached by previous meteorological spacecraft. Because of a malfunction in the launch vehicle's second stage, the satellite was boosted into an elliptical orbit ranging between 436 (perigee) and 1,602 (apogee) statute miles from the earth. The satellite also was placed into an orbit that is not quite sun-synchronous. (1) It drifts at a rate of one-half degree of longitude per day, or one hour per month.

At apogee, TIROS IX is well into a region of high radiation intensity. This type radiation consists of electrons and protons ejected by the sun or artificially created as a result of nuclear weapons testing. Being high up into this region—it extends nominally between about 400 and 40,000 miles—its operating life expectancy is uncertain. Regardless of what this lifetime proves to be, this latest member of the TIROS family will have made a significant contribution to future weather satellite systems. It will have served as a "flying testbed" for the TOS (TIROS Operational Satellite) System which the Weather Bureau will implement in early 1966.

*(1) A sun-synchronous orbit is one whose plane precesses about the earth at a rate equivalent to the earth's movement about the sun. Thus a sun-synchronous satellite maintains a constant relationship to the sun. It will pass over the Equator at the same local time each pass.*

What new elements will be incorporated in TOS?

Probably the most important is the placing of the two television cameras so that they look out from the rim instead of from the baseplate of the satellite.

This, plus the fact that the spinning satellite—it must spin at 8-12 r.p.m. to maintain stability—can be magnetically torqued or turned to roll like a wheel along its orbital path, will enable the cameras to look straight down once during each rotation. Vertical pictures can therefore be taken and earth orientation of the cameras achieved. TIROS IX has now demonstrated the practicality of this picture-taking technique.

Another TIROS, configured almost identically with IX is now planned for launch from Cape Kennedy during the fourth quarter of this year. Whereas TIROS IX, like all previous TIROS spacecraft, was a NASA-funded research and development satellite, this new TIROS will be funded by the Weather Bureau. Like its predecessor, it will be intended to prove still further the techniques and subsystems scheduled for use in the TOS System. It will also, of course, complement the coverage provided by TIROS IX or replace it if IX goes dead in the meantime. (2)

#### *Infrared Sensors To Be Added to TOS*

Another feature possessed by the TIROS Operational Satellite will be its infrared (IR) observational capability for gross cloud-cover mapping at night and measurement of the planetary heat budget. This will be achieved by flatplate IR sensors operating in a manner similar to that of the early Suomi experiments aboard Explorer VII and several of the NASA TIROS series.

For TV coverage, TOS will operate in two ways: (1) a *direct readout*, or APT, mode by which pictures will be immediately transmitted to local users; and (2) a *recorded* mode by which pictures will be stored aboard the satellite and read out upon command to the Weather Bureau Command and Data Acquisition facilities at Fairbanks, Alaska, and Wallops Island, Virginia. From Fairbanks and Wallops these pictures will then be transmitted via 48 kc./sec. wideband communication links to NWSC for gridding, interpretation, and computer processing.

Ideally, TOS should combine both direct readout and stored readout in a single spacecraft. The state of the art does not at present permit this within a

(2) A Weather Bureau-owned TIROS satellite, with cameras in the baseplate, also may be launched into a near-polar, sun-synchronous orbit in mid-1965 as a further operational backup, particularly for the hurricane season.

single camera system. Initially, the TOS System will consist of *two* different satellite versions, one including two APT cameras and the other two AVCS (Advanced Vidicon Camera System) cameras. Having two cameras on each spacecraft is for backup purposes. The AVCS camera is the same 1-inch, 800-line camera used aboard Nimbus.

The National Operational Meteorological Satellite System, for which the Weather Bureau has responsibility, will formally begin during the winter of 1965-1966. That period will see the launch of the first APT-version TIROS Operational Satellite. This APT-equipped TOS will be followed by the first AVCS version. Aboard the latter spacecraft, the first flatplate radiometer IR subsystem will also be carried. Target operating lifetimes for both the APT and AVCS versions are six months or better. It is planned to have one operating unit of each version in orbit at all times, staggering the launches as necessary to achieve this goal. The TOS System will be considered fully implemented when one each APT and AVCS spacecraft is operating.

With the successful initiation of the TOS System, what will be the pattern of subsequent weather satellite development and use?

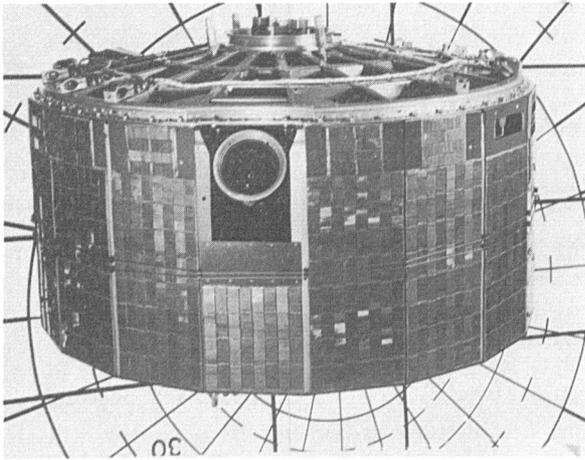
The first objective—and with top priority—will be the combining of the APT and AVCS cameras into a single system. Once this is achieved, the number of spacecraft . . . and of launch vehicles . . . required to maintain the TOS System in a continual operational status may be reduced.

Another prime objective, of course, is as long an operating lifetime as possible. TIROS satellites have performed successfully for more than a year and a half (TIROS VII). Similarly long life, or even longer, will be sought.

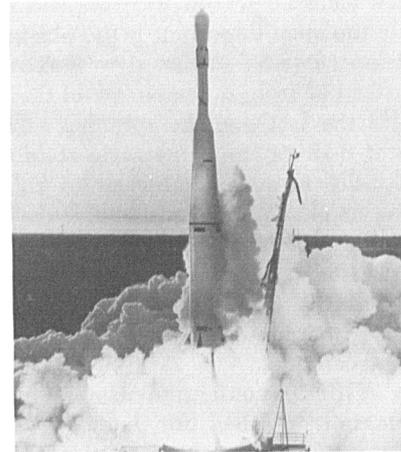
The very-low-resolution IR sensors will, it is expected, be changed in favor of ones providing higher resolutions better adapted to nighttime cloud-cover mapping.

Protection of the satellite against degradation by space radiation (electrons and protons) will be an important consideration in determining the shape of TOS spacecraft to come. One possibility is to extend satellite power life by using isotopic sources instead of solar cells. This is not an unmixed blessing. Isotopic power is expensive and must be "traded off" against the longer lifetime advantages which it offers. If such power is used, then the lifetime of the sensors and other subsystems aboard must, of course, be commensurate.

Gradually, then, TOS will evolve, develop, and improve. With this will doubtlessly come increases



TIROS IX, showing one-half inch vidicon camera looking out from satellite rim.



The first TIROS, hailed as a major breakthrough in meteorological technology, was lifted into orbit five years ago—April 1, 1960. TIROS I, shown perched atop a Thor-Able rocket at the start of its historic journey, was operational for 79 days and produced 19,389 meteorologically useful pictures.

in spacecraft size and weight. The TOS launch vehicle fairing, carried on the nose of the Improved Thor-Delta, will permit the satellite to “grow” to more than twice its presently contemplated length. Boosted from the Western Test Range, the same Delta vehicle will be able to place a TOS, weighing 100 pounds more than the present TOS, into the same 750-nautical-mile polar orbit. (3)

Not all of the future growth of weather satellite systems, however, will be based upon TOS. The synchronous or 24-hour equatorial satellite, one whose orbital movement equals that of the earth’s rotation, is another spacecraft type which should, and undoubtedly will, be pursued in parallel with TOS operations.

Twenty-two thousand three hundred miles above the Equator, such a vehicle will maintain a fixed or hovering position in the sky. From this vantage point, it can keep the disc of the earth within view continually, or nearly so. According to one concept, using an image dissector camera, it will be able to “take a picture” of the earth’s disc and its cloud cover about every 10 minutes, using the spacecraft’s stabilizing spin to generate the necessary

(3) Pending installation of a Delta launch facility at the Western Test Range (Vandenberg Air Force Base), TOS will be orbited from the Eastern Test Range (Cape Kennedy).

scan lines.

#### *Collection, Communication Ability Seen*

The years to come may see satellites used for the collection and communication of conventional weather observations made by moored or drifting ocean buoys and by free-drifting, constant-level balloons.

This future data-collecting capability will be tried out first on a polar-orbiting NASA research and development Nimbus satellite in the form of an experiment called IRLS (Interrogation, Recording, Location System). The Weather Bureau plans to cooperate with NASA in this test by providing, if possible, buoys and balloons which will respond to interrogating signals from the satellite and which will furnish data for the Nimbus to record, carry back to a Command and Data Acquisition Station, and there read out. IRLS, as its name implies, will not only collect data; it will position-fix or locate the moving buoys and balloons as well. After the Nimbus flight, other data-collection experiments will almost certainly follow, possibly on a synchronous equatorial satellite.

Work at NWSC has resulted in the evolution of a design for a 7-foot, disc-shaped ocean buoy to be used, moored or drifting, with IRLS and with



Three vortices appear in this unusual two-picture mosaic made from TIROS IX pictures of the Indian Ocean.

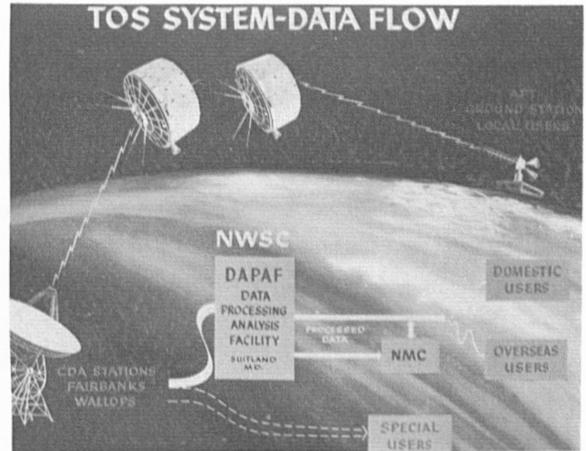


Diagram showing (1) stored readout of TOS AVCS version to Command and Data Acquisition Stations for further transmission via wideband links to Suitland for centralized processing and (2) direct readout of TOS APT version to local users.

follow-on experiments or operational applications. Also underway at NWSC is the development of prototype engineering models of constant-level balloons equipped with two-dimensional electronics packages. With these experimental, full-scale, operating models, it is planned to tackle the question of whether the presence of such vehicles in the air will or will not constitute a hazard to aircraft. This consideration, plus the need for international agreement to permit balloon overflight, will weigh heavily in any decision to deploy the proposed balloon system.

It is difficult, perhaps impossible, to predict accurately these and other developments which the meteorological satellite future holds in store.

Here are some more possibilities however:

Much-improved sensors, particularly using infrared techniques;

Ability to obtain vertical temperature soundings by virtue of the Satellite Infrared Spectrometer (SIRS), developed and balloon-tested by NWSC and planned for inclusion on NASA's third Nimbus satellite;

Development of microwave radiometry as an effective sensing technique;

And use of APT's latent capabilities for direct transmission of other types of information—high-resolution infrared observations, for example—in

addition to television pictures.

There are many more . . . too many to be gone into here. In general, however, they fall into two basic categories: (1) observation and (2) communication. From this it can be deduced that future Weather Bureau operational satellite systems may well combine observation with communication functions.

The definition of "meteorological satellite" is by no means limited to unmanned spacecraft alone. The utilization of manned space platforms for meteorological purposes, both of a research and perhaps even operational nature, holds substantial promise for the future improved observation of the earth's weather processes.

There is, finally, another kind of satellite which may also someday play a role in monitoring and studying terrestrial weather. This is the moon, whose use for this purpose will, of course, depend upon (a) the nature of its surface, (b) whether a base is established there, and (c) its ability to compete with the observational capability of closer-in satellites.

From these possibilities for the future, only one certain conclusion can be drawn—the meteorological satellite is still within its infancy and its greatest impact and contributions are yet to come. ●

# Pilot Weather Briefing Service

by N. A. Lieurance,  
Director of Aviation  
Weather Affairs



A one-stop, one-call pilot briefing service is now being operated by the Weather Bureau and the Federal Aviation Agency at 24 airports. Where this service is offered, the pilot can obtain his weather, navigational, and NOTAM briefings and file a flight plan with a single stop or a single telephone call to the FAA Service Station. He is referred to a Weather Bureau meteorologist whenever he requests it or if he requires a weather briefing beyond the capabilities of the Flight Service Specialist.

Pilot weather briefing can be considered to consist of two related but separate functions. The first is providing the pilot with professional meteorological advice, which is the province of the Weather Bureau. The second is dissemination to the pilot of weather information prepared by the Weather Bureau; this can be performed by Weather Bureau employees, employees of the FAA, or other personnel. The key factor is access to communications channels which enable quick, timely dissemination of weather information.

The Flight Service Station can be a "retail store" for aviation meteorological information prepared by the Weather Bureau or obtained from pilots and other recognized sources, thus providing many additional dissemination outlets for weather information. The Weather Bureau, however, remains the source of professional meteorological consultation for the pilot.

The goal of all aviation weather programs—including the one-stop, one-call service—is to promote the safety and efficiency of aircraft operations and to deliver the Weather Bureau's products to the pilot in the most efficient manner. This problem of delivery has become increasingly critical as general aviation has grown.

Before the first plane ever left the ground, the Weather Bureau began providing services to aviation. In 1902, the Bureau made a special study of surface winds at Kitty Hawk to assist the Wright

brothers in their history-making flight. Through the years, its services were expanded—first, to aid military flights during World War I and, later, to support the Post Office's airmail services.

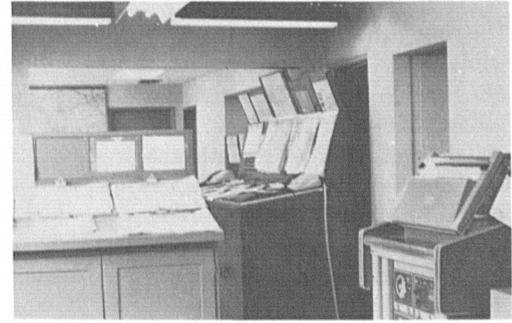
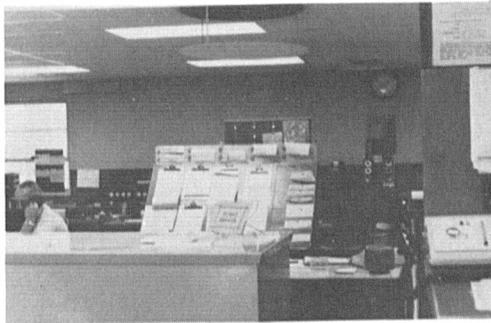
In 1926, the Air Commerce Act made the Weather Bureau responsible for "such weather reports, forecasts, warnings, and advices as may be required to promote the safety and efficiency of air navigation in the United States and above the high seas." To fulfill this responsibility, the Bureau then began establishing Weather Bureau Airport Stations at major terminals. These responsibilities were increased under the Civil Aeronautics Act of 1938 and again, as civil aviation expanded rapidly in the 1950's under the Federal Aviation Act of 1958.

During the past decade, the Weather Bureau has had difficulty in meeting the ever-growing demands for aviation weather briefings. At no time have more than one tenth of the public airports in the United States been served directly by Weather Bureau Airport Stations. Recognizing the vital importance of weather to the pilot, the Bureau has devised a number of excellent methods for achieving the broadest possible dissemination of aviation weather information. Standardized weather displays have been developed for Bureau offices, so that the pilot can help brief himself and require less personal consultation with the meteorologist. In many places, automatic telephone answering devices have been installed to brief pilots for short flights. Continuous aviation weather broadcasts, carried on FAA radio facilities, are available to pilots throughout the Nation.

Another important step was taken in 1960, when the Weather Bureau began training and certifying FAA Flight Service Specialists for pilot weather briefing. Training and certification of some 4,000 Flight Service Specialists provided nearly 300 additional manned outlets for aviation weather information. At the same time, a Weather Bureau Quality Control Program was established to ensure a high standard of proficiency in weather briefing.

In some places, however, the Flight Service Specialists are handicapped in their briefing efforts because they lack the information available on facsimile and Service C teletypewriter. Pilots at these locations still must visit or call both the Weather Bureau and the Flight Service Station in order to obtain detailed information for extended flights.

In spite of our efforts at mass dissemination of aviation weather information, Weather Bureau personnel have been unable to cope with pilots' demands for personal briefing and, at the same time,



At Las Vegas, one-stop service is indicated by a sign outside the Weather Bureau-FAA office (1). When a pilot enters, he faces the weather briefing display (2). The Flight Service

Station (3) is to his left, and the Weather Bureau Office (4) is on his right.

give adequate attention to aviation forecasts and warnings. The growing magnitude of the problem is indicated by a few statistics on aviation. From 1952 to 1962, the number of aircraft miles flown in the United States nearly doubled. The number of registered aircraft increased from approximately 55,000 in 1954 to over 87,000 in 1964. Active pilots in the United States today total more than 378,000.

At Columbus, Ohio, in 1963, the Weather Bureau Meteorologist in Charge and the Flight Service Station Chief recognized that the arrangement of their facilities was causing serious inconvenience to pilots bent on obtaining complete flight information. Walk-in pilots had to go from one floor to another in the building to contact both the Weather Bureau and the Flight Service Station. Moreover, says Columbus MIC Howard S. Kenny, "Several knotty problems existed within the local Weather Bureau operation. First, the pilot had a legitimate complaint on delays encountered in trying to reach the Weather Bureau by telephone. When the pilot did complete his call and was briefed, he then had to place another call to file a flight plan. Even when a call was put through on the first try, the pilot still used an average of 10 to 12 minutes to complete weather briefing and filing.

"Second, and very important," continues Mr. Kenny, "was the matter of updating the local terminal forecast not only for the retailer of the Weather Bureau product, but for consistency and quality within our own shop. It was imperative for the Weather Bureau staff to find several minutes

every hour for study and review of weather changes in progress."

So MIC Kenny and the Flight Service Station Chief, Roger E. Graves, together worked out a modified form of ring-through service for pilots at Columbus. With the approval and support of Weather Bureau and FAA Central Offices, they tested the system from November 1963 to March 1964.

All incoming telephone calls for flight briefing went directly to the Flight Service Station, where the Flight Service Specialists provided the pilot with Weather Bureau forecasts, sequence weather reports, winds aloft forecasts, applicable inflight advisories, and PIREPS. Then, if the pilot requested information not available at the Flight Service Station or if his request exceeded the capabilities of the Flight Specialist, the call was put through to the Weather Bureau by means of a special switching arrangement. When the weather briefing was completed, the call was switched back to the Flight Service Station, where the pilot filed his flight plan. In this way, the pilot dialed only once.

The experiment proved to be an unqualified success, and steps were taken to implement the service at other locations. Dr. White established Weather Bureau policy relating to this type of service in his memorandum of September 3, 1964, to the Director, National Meteorological Services. The Federal Aviation Agency issued Order OA 7233.1 on December 17, 1964, which established a similar policy.

Under the name of "one-stop, one-call service," the program is now in operation at 24 locations: Columbus, Ohio; Boston, Mass.; Phoenix, Ariz.;

Tucson, Ariz.; Birmingham, Ala.; Lincoln, Nebr.; LaCrosse, Wis.; San Diego, Calif.; Fresno, Calif.; Bakersfield, Calif.; Las Vegas, Nev.; Boise, Idaho; Roanoke, Va.; Charleston, W. Va.; Miami, Fla.; Orlando, Fla.; Omaha, Nebr.; Portland, Oreg.; Billings, Mont.; Alexandria, La.; San Antonio, Tex.; Red Bluff, Calif.; Oakland, Calif.; and Sacramento, Calif. Before the end of Fiscal Year 1965, it will be started at additional locations.

The one-call, one-stop pilot briefing service is possible where a Weather Bureau station and a Flight Service Station are co-located. The Federal Aviation Agency extends all telephone lines used for pilot briefing purposes into the Weather Bureau office, and the Weather Bureau drops its unlisted aviation line. In a number of instances, a common pilot briefing counter—convenient to both the Weather Bureau and the Flight Service Station—has been established. Usually, the Flight Service Station posts all Service A material, and the Weather Bureau posts Service C material as well as additional maps and charts needed to keep the display current.

Wherever this new service has been instituted, it has been received enthusiastically by Weather Bureau and FAA personnel and by pilots.

At Boston, where the one-stop service was inaugurated in October 1964, MIC Oscar Tenenbaum reports that "The total number of individual telephone pilot briefings by our personnel has been reduced by more than 50 percent since the service began. It has been of appreciable assistance to our short-handed Public Service Unit in trying to handle its many and diverse duties."

Columbus MIC Kenny compares telephone contacts with pilots in December 1962, before the program began, with those in December 1964. In the earlier month, the Weather Bureau gave 3,560 pilot briefings, while 1,022 pilots were briefed by the Flight Service Station only. Last December, the Weather Bureau answered 755 calls for aviation weather information, and 4,399 pilots were briefed by the Flight Service Station.

According to Mr. Kenny, "The type of request ordinarily requiring contact with the meteorologist is one in which interpretation of an event or prog chart is needed by the pilot. Cases referred to the Weather Bureau include radar interpretation, upper-air temperature information, cloud cover and haze conditions for aerial photography, thermals for glider pilots and planning for 'tomorrow.' Very few requests are received in the Weather Bureau for sequence weather or local ceiling and visibility."

Another MIC, Ray Randall of Bakersfield, Cali-

fornia, states that the new service "reduces the workload on Weather Bureau personnel, which gives the meteorologist more time to develop his local forecast and to devote more time to the public and agricultural aspects of the weather information disseminated."

The aviation forecaster's primary duty is to make accurate and timely forecasts and to serve *all* the pilots who plan to use the airspace. But when he spends large amounts of his time providing routine weather data to individual pilots—data which can just as easily be disseminated by others—he is not making the best use of his professional talents.

The new one-stop program releases many Weather Bureau man hours for professional meteorology, such as producing forecasts, warnings, and advisories for aviation. Summarizing his region's experience with the joint service, Regional Director Hazen H. Bedke says:

"During bad weather, which is fairly frequent along the west coast and in the mountain areas, the consolidation of weather briefing services permits our forecasters to have more time to take care of all related problems: public service, flood, and other warning responsibilities, agricultural services, etc. Our forecasters are able to keep on top of the weather better and keep the Flight Service Station better advised of what is going on. As a result, the summation of our total service covering the complete spectrum of our operations is improved."

The Weather Bureau's role, then, is to prepare the finest meteorological products that the science will permit, to provide professional meteorological judgment in accordance with established scientific practices, and to ensure that the products are available to the Flight Service Specialist on a timely basis and in an understandable form.

While the new arrangement generally decreases the aviation weather briefing workload at a Weather Bureau station, it increases the responsibility of the local MIC and his staff to ensure that the local Flight Service Station has the latest and best information that the Weather Bureau can produce, to assist the local Flight Service Station in display and presentation, and to help develop greater understanding of the uses of the Weather Bureau's material.

Working procedures at Lincoln, Nebr., are typical of the excellent cooperation at all 24 stations. "Each briefer coming on duty receives a quick resume of the weather situation and expected developments," says MIC Gordon Lippert. "An exchange of information is carried on and, when bad weather is approaching, the Weather Bureau

forecasters drop all climat or administrative work and concentrate on the weather problem. Also, on occasions of briefing overloads, the Weather Bureau forecaster may handle personal briefings or assist on the FSS telephones."

The whole operation is designed so that Weather Bureau personnel are readily available to the pilot. Although the pilot is met first by a Flight Service Specialist, he is not deprived of direct contact with the meteorologist if he wants or needs it to plan his flight. Under no circumstances are the Weather Bureau's doors closed to the pilot. By the same token, Flight Service Specialists do not get involved in professional meteorological matters, nor do they provide weather service of a non-aviation nature.

The new program allows the meteorologist to devote more of his time to the job he does best. It also uses the talents of the Flight Service Specialist in the work for which he is most qualified. The FAA Flight Service Specialist is an integral part of aviation, keenly interested in serving the industry. So, this cooperative effort of the Federal Aviation Agency and the Weather Bureau permits maximum use of the resources of both agencies in the interest of aviation.

According to Kenneth Rice, MIC at Boise, "The cooperation between our two agencies has been all that could be expected. We believe that it is a more professional-type operation than in the past. There has been practically no opposition to the change. We have only one pilot that yet insists that he be briefed by Weather Bureau personnel."

By making more people and facilities available to help the pilot, one-stop briefing also makes pre-flight and inflight weather information easier for the pilot to obtain. Pilots calling the Flight Service Station for weather information compete only with other pilots, whereas pilots calling the Weather Bureau are competing with the general public.

At Lincoln, Mr. Lippert terms the new service "definitely superior. No operator has reason to believe that anything might have been taken away from him." Mr. Randall feels that the program "reduces confusion to the pilot."

"Most pilots are pleased with the services," Mr. Bedke reports, "because they can get their weather information and file their flight plan all with one phone call or one stop at the briefing counter."

Thus, the one-stop pilot briefing program is advantageous for all concerned. It permits the Weather Bureau to devote more time to its basic responsibilities for taking observations, forecasting the weather, and issuing weather warnings, and for



Pilots look over the weather briefing display at Bakersfield, Calif. The Weather Bureau office is to the left, and the Flight Service Station briefing counter can be seen in the background.



At Charleston, W. Va.'s, joint briefing counter, the Flight Service Station is at left, and the Weather Bureau is on the right.



David D. Thomas, FAA's Associate Administrator for Programs, terms the one-stop, one-call pilot briefing program "a tangible innovation in our service to aviation which is welcomed by pilots. Of even greater importance, however, is the fact that it represents an improvement in the safety and efficiency of general aviation flight operations."

establishing and maintaining standards in these areas.

The program benefits the Nation by eliminating duplication of effort and bringing about more efficient use of manpower on the part of the Weather Bureau and the FAA.

And the pilot benefits because he receives better flight information in a more convenient way. ■

# Commerce Honors 16 Bureau Men

Secretary of Commerce John T. Connor presented five Gold and ten Silver Medals to Weather Bureau employees at the Department's Annual Honor Awards Program, February 15, 1965, in Washington.

## GOLD MEDALS

The Department's highest award, the Gold Medal, was given to Sigmund Fritz, Louis P. Harrison, David S. Johnson and S. Fred Singer (joint award), Jerome Namias, and Herbert C. S. Thom.

*Sigmund Fritz*



Dr. Sigmund Fritz, Director of the Meteorological Satellite Laboratory, National Weather Satellite Center, was presented a Gold Medal for his "outstanding contributions to research in solar radiation, ozone, and meteorological satellites; and for exceptional leadership as Director of the Weather Bureau's Meteorological Satellite Laboratory."

Internationally known as an expert on radiation theory, Dr. Fritz has gained further recognition during the past six years as a leader in meteorological satellite research. Topics covered by Dr. Fritz in his scientific papers, published in both domestic and foreign journals, include earth-atmosphere heat budget, interpretation of satellite pictures, mountain waves, ice and snow and the use of satellite radiation data for estimating cloud heights, and surface temperature changes.

Recently he was appointed a vice-president of the International Association of Meteorology and Atmospheric Physics of the International Union of Geodesy and Geophysics. He is also a member of the American Geophysical Union and the American Meteorological Society.

Dr. Fritz has a B.S. degree in mathematics from Brooklyn College and M.S. and Ph.D. degrees in meteorology from Massachusetts Institute of Technology. He joined the Weather Bureau at New York City in 1937 as an observer. While serving in the Navy as an aerologist during World War II, he made forecasts for carrier operations in the Pa-

cific. He returned to the Weather Bureau in 1946 as a research meteorologist.



*David S. Johnson*



*S. Fred Singer*

*(joint award)*

David S. Johnson, Director of the National Weather Satellite Center, and S. Fred Singer, former NWSC Director, were presented a joint award "in recognition of unusual ingenuity, leadership, and guidance in the development and implementation of a National Operational Meteorological Satellite System."

Mr. Johnson was one of the prime movers in establishing the Bureau's Meteorological Satellite Laboratory, forerunner of the National Weather Satellite Center. He served as Chief of the Laboratory from 1960 until 1962, when he became Deputy Director of the newly formed Satellite Center under Dr. Singer. In 1964, he became Director of NWSC.

Since 1958, Mr. Johnson has been engaged in research, development, and technical management of meteorological satellites and rockets. He is chairman of the Ad Hoc Committee on Rockets of the Interdepartmental Committee for Applied Meteorological Research, a member of the Meteorological Satellite Program Review Board, and represents the Department of Commerce on the Joint Navigation Satellite Committee.

Mr. Johnson has represented the United States at a number of international meetings, serves as correspondent for Meteorological Rockets of the International Council of Scientific Unions' Committee on Space Research (COSPAR), and is a member of COSPAR's Working Group for the International Years of the Quiet Sun. He was a member of the U.S. team that negotiated a cooperative weather satellite program with the U.S.S.R. and a member of the WMO Panel of Experts on Meteorological Satellites.

A member of the American Meteorological Society, Mr. Johnson is a Councilor of that organization and serves on its Committee on Atmospheric

Measurements. He holds bachelor's and master's degrees in meteorology from the University of California at Los Angeles.

Dr. Singer, presently Dean of the University of Miami's School of Environmental and Planetary Sciences, is one of America's leading space physicists. A pioneer in space research and the author of more than two hundred scientific publications, he was engaged in early United States V-2 rocket flights and high-altitude research while with the Johns Hopkins University Applied Physics Laboratory in 1946-50.

Dr. Singer joined the faculty of the University of Maryland in 1953 as an associate professor of physics and was made a full professor in 1959. In 1962 he became Director of NWSC, resigning in 1964 to accept the position at the University of Miami.

In 1958, he received a special commendation from President Eisenhower for outstanding achievement in the development of satellites for scientific purposes, and in 1959, he was honored by the United States Junior Chamber of Commerce as one of the Ten Outstanding Young Men of the Year. He was elected to membership in the International Academy of Astronautics in 1961 and received the first Astronautics Medal of the British Interplanetary Society in 1962.

Dr. Singer is a graduate of Ohio State University and holds M.A. and Ph.D. degrees from Princeton University.



Louis P. Harrison

Louis P. Harrison received a Gold Medal for "highly distinguished authorship and outstanding contributions to the fields of barometry and psychrometry."

Mr. Harrison has received international praise for his work in producing the *Manual of Barometry*, the definitive reference book in its field. (See TOPICS, May 1964.) During the course of his investigations, he developed new and improved methods for reducing pressure to sea level.

While serving as a Weather Bureau representative or as a consultant to the WMO, Mr. Harrison has played an active role in the Organization's theoretical and instrumentation work. He has recently

written an extensive monograph on humidity and now is chairman of the WMO Working Group on Psychrometry of the Commission for Instruments and Methods of Observation, which is developing improved standards of measuring humidity.

In 1953, Mr. Harrison was awarded the Department of Commerce Silver Medal in recognition of his work in designing meteorological scales, tables and graphs, in preparing outstanding technical reports, and for his service on numerous committees of the WMO.

A member of the American Meteorological Society, the American Geophysical Union, and the American Physical Society, Mr. Harrison has a B.S. degree in physics from George Washington University. He joined the Bureau as a weather observer in 1927.



Jerome Namias

Jerome Namias, Assistant Director of the National Meteorological Center and Manager of its Extended Forecast Division, was awarded the Gold Medal for "major contributions to science through original research, highly distinguished authorship, and expert direction of programs in the field of extended weather forecasting."

Since he joined the Weather Bureau in 1941, Mr. Namias has achieved worldwide recognition for his development of methods of forecasting the weather over periods of five to thirty days, as well as for his research on problems of long-range variations in weather and worldwide weather interrelations. Awarded the Department of Commerce Silver Medal for Meritorious Service in 1950, he received a Rockefeller Public Service Award in 1955 which enabled him to carry on research at the International Institute of Meteorology at the University of Stockholm, Sweden. Also in 1955 he was given the American Meteorological Society Award for Extraordinary Scientific Accomplishment for his contributions to and stimulation of research in the principles and application of extended and long-range forecasting techniques.

Mr. Namias has participated in numerous international conferences including the session on long-range forecasting and general circulation at a Symposium on Numerical Weather Prediction in Tokyo in 1960, and he was a visiting professor at the

University of Mexico in 1961. He served as advisor on problems of global and hemispheric weather analysis to the International Antarctic Analysis Center at Melbourne, Australia.

He has an M.S. degree from Massachusetts Institute of Technology and also attended the University of Michigan. Prior to joining the Weather Bureau, he was a meteorologist with TWA and a research associate at M.I.T. During World War II, he prepared special weather forecasts for Atlantic convoys and major military operations in the North African and Normandy campaigns.

Mr. Namias has written many research papers and articles for technical journals, encyclopedias, and popular science magazines. He is a member of the American Meteorological Society, the American Geophysical Union, the Royal Meteorological Society of Great Britain, and the Washington Academy of Sciences.



*Herbert C. S. Thom*

Herbert C. S. Thom, Project Scientist of the Bureau's Statistical Climatology Project, was honored by a Gold Medal for "outstanding contributions to statistical climatology, their industrial and agricultural applications, and highly distinguished authorship."

Mr. Thom's work with the World Meteorological Organization and NATO's scientific organization has made him a recognized authority on statistical climatology and meteorology. Among his most recent achievements in climatology is a study of the wind's effects on building structures. His procedures and standard values for the United States have been widely adopted by industry and the American Society of Civil Engineers.

In 1963 Mr. Thom received the American Meteorological Society Award for his outstanding contribution to the advance of applied meteorology. In 1959 he received the Department of Commerce Silver Medal in recognition of valuable public service rendered through his investigation of meteorological statistics and engineering techniques and their application to the agricultural and industrial economy of the United States.

From 1955 to 1957, Mr. Thom served as Chief Climatologist on the President's Advisory Committee on Weather Control. In 1953 and again in

1957 he was a delegate to the World Meteorological Organization's Commission for Climatology. He was research professor of statistics at Iowa State University during 1944 to 1948, professor of climatology at the University of Maryland during 1949 to 1952, and visiting professor of statistics at Cornell University in 1952.

Mr. Thom holds B.S. and M.S. degrees from George Washington University in Washington, D.C. He joined the Weather Bureau's River and Flood Division in 1939 and later was Meteorologist in Charge of the Weather Bureau station in Des Moines, Iowa, from 1944 to 1948. He returned to Washington as Chief of the Weather Bureau's Climatological and Hydrological Services, Industrial Section. He was also Chief of the Climatological Investigations Section.

## Silver Medal Winners



S. R. Barbagallo, Head of the Standards and Procedures Branch, Communications Division, was cited for "significant contributions and services of long-range value in the field of international meteorological communications."



Walter D. Komhyr, Leader of the Ozone Section, Office of Meteorological Research, received a silver medal for "a valuable contribution to science and technology in the development of a highly successful ozonesonde for use by the Weather Bureau."



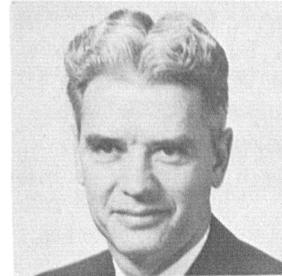
Creighton B. Nelson, Advisory Agricultural Meteorologist at Twin Falls, Idaho, was honored posthumously for "extremely valuable accomplishments in administering the Weather Bureau's Agricultural Weather Service Program in Southern Idaho."



Ernest L. Kvam, Manager of the Administrative Operations Division, was honored for "valuable contributions through nearly 20 years of sustained high devotion to duty in the field of administration."



N. D. Ogden, River-Rainfall Observer at Simms, Montana, was cited for "unusual courage and competence during a Sun River flood, June 8, 1964, which enabled the Weather Bureau to issue lifesaving flood warnings."



Robert B. Orton, State Climatologist at Austin, Texas, received a silver medal for "extremely competent performance of duties for more than 10 years, particularly as Weather Bureau State Climatologist for Texas since 1960."



Orvil R. Warner, Manager of the Operations Division at the Salt Lake City Regional Office, was presented a silver medal for "outstanding leadership as Meteorologist in Charge at the Weather Bureau Airport Station, Salt Lake City, Utah."



Harlan K. Saylor, Assistant Director for Weather Analysis and Forecasting at NMC, was cited for "outstanding leadership and major contributions to the improvement of weather analysis and forecasting."



Charles W. Webster, Electronic Technician at the National Meteorological Maintenance Training Center, Kansas City, Missouri, was awarded a medal for "unusual courage and competence, and for outstanding resourcefulness in a meteorological program at Wilkes Station, Antarctica."



Jay S. Winston, Head of the Planetary Meteorology Branch of NWSC, was cited for "valuable contributions to meteorology in circulation studies, interpretation of satellite data, and heat budget of the earth-atmosphere system."

## Technician in Antarctic Subdues Fire

A Weather Bureau employee who helped to extinguish a fire at Wilkes Station in the Antarctic was among those receiving a Department of Commerce Silver Medal.

Charles W. Webster, now an Electronic Technician at the National Meteorological Maintenance Training Center, Kansas City, was one of three U.S. Weather Bureau employees working with 20 Australians at Wilkes Station in 1963. In making a routine equipment check with a co-worker, Mr. Webster discovered the fire in a small plywood heater building a short distance from the main part of the camp. While the other man ran for help, Mr. Webster entered the balloon inflation building, which was attached by heat ducts to the burning structure. Forced back by heavy smoke, he was barely able to stagger outdoors for relief from

smoke inhalation. Reinforced by camp personnel, he directed the firefighting and finally was able to reenter the inflation building, where he successfully extinguished the flames that were surging through the heater duct. Then nearly overcome by smoke, he again stumbled outside for air.

Mr. Webster's quick thinking and action is credited with saving the camp, especially since the inflation building contained hydrogen for weather balloons and the camp's food and medical supplies.

The station missed only one weather observation, and in the next several days Mr. Webster replaced damaged electrical wiring and assisted the station carpenter in constructing a new heater building. ■

## Montana Observer Braves Flood To Aid River Forecasters

A Montana rancher, who serves as a cooperative river-rainfall observer for the Bureau, was one of the recipients of a Commerce Department Silver Medal for his "unusual courage and competence during a Sun River flood, June 8, 1964, which enabled the Weather Bureau to issue lifesaving flood warnings."

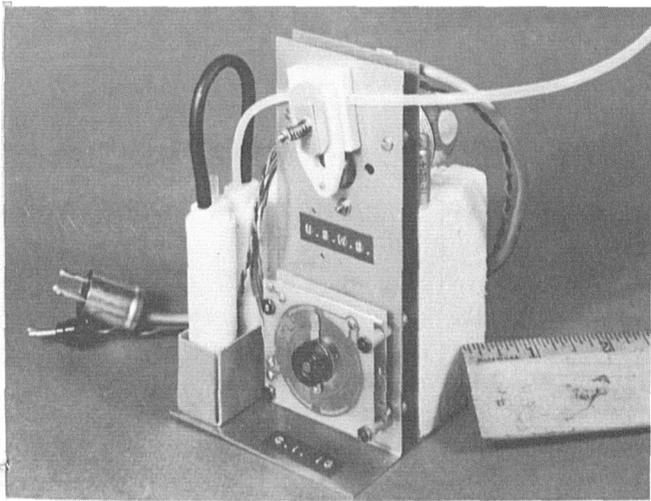
N. D. Ogden, of Simms, Montana, was asked by the Weather Bureau to take special gage readings at his location on June 8 since a flood was developing in the Sun River in western Montana. After the loss of communications at Fort Gibson, Simms was the most important point for obtaining a reliable estimate of the amount of water that would flow down the Sun River. Assisted by his son, Morton, Mr. Ogden continued to take observations in spite of the rapidly rising flood. Early in the evening of June 8, the flood waters had completely covered the approach on the road leading from the Ogden's home to the bridge where the gage was located, a distance of approximately 300 feet. For one of

the last observations at 10 p.m., Morton Ogden waded waist-deep into rushing, debris-laden water to make a reading on the staff gage at the bridge.

The Ogdens then established a make-shift gage near their home which they used until the flood crest moved through at midnight destroying all telephone communications. They were evacuated from the roof of their house at 9 a.m. the following morning, after their planned route of evacuation across the bridge was washed out.

Mr. Ogden's valiant service—he was paid at the standard rate of sixty cents for each observation—enabled the River Forecast Center at Kansas City to accurately forecast peak flood conditions and to issue flood warnings, which resulted in successful emergency evacuation of persons in the danger area.

Mr. Ogden has served as river-rainfall observer at Simms for two years. Mrs. Ogden was the observer there until her death in 1963. ■



The tiny Teflon pump (upper center) and the ozone sensing unit (the two tanks at the left) are shown in this picture of Mr. Komhyr's ozonesonde.

## New Ozonesonde Developed by Bureau Scientist

A relatively inexpensive, lightweight, and accurate ozonesonde has been successfully developed and tested by Walter D. Komhyr, Supervisory Physicist of the Ozone Section of the Office of Meteorological Research. The new ozonesonde was a major factor in Mr. Komhyr's winning a Department of Commerce Silver Medal for Meritorious Service in February.

When Mr. Komhyr, a native of Canada, who came to the Weather Bureau in 1961, set out to develop his ozonesonde, he reasoned that his primary objective was to devise a balloon-borne instrument that would measure ozone on an absolute scale. Furthermore, the instrument had to be reasonably inexpensive, of light weight, and be able to be prepared for use by relatively inexperienced observers. The results of tests on the new instruments indicate that Mr. Komhyr's goals have been met to a large degree.

Because of its simplicity, the ozonesonde is expected to cost less than \$100 per unit (half the price of instruments previously used by the Weather Bureau). The instrument in its styrofoam package measures 6 by 6 by 8 inches, and weighs 1¼ pounds. Performance among the instruments tested has been found to be remarkably consistent.

The difficulty of obtaining accurate measurements of ozone can be seen when one realizes that in unpolluted surface air, for instance, there are only two or three molecules of ozone per 100 million molecules of air. Also, ozone is very active

chemically—being decomposed by most materials with which it comes in contact.

Meteorologists are extremely interested in the distribution of ozone in the atmosphere. Ozone has been linked with such phenomena as the large reversed seasonal temperature variation that occurs at the mesopause at high latitudes and the breakdown of the winter polar vortex in the stratosphere. Most important, perhaps, is the fact that the ozone plays an important role in the radiative-thermal budget, thereby giving rise to some of the characteristics of the general atmospheric circulation.

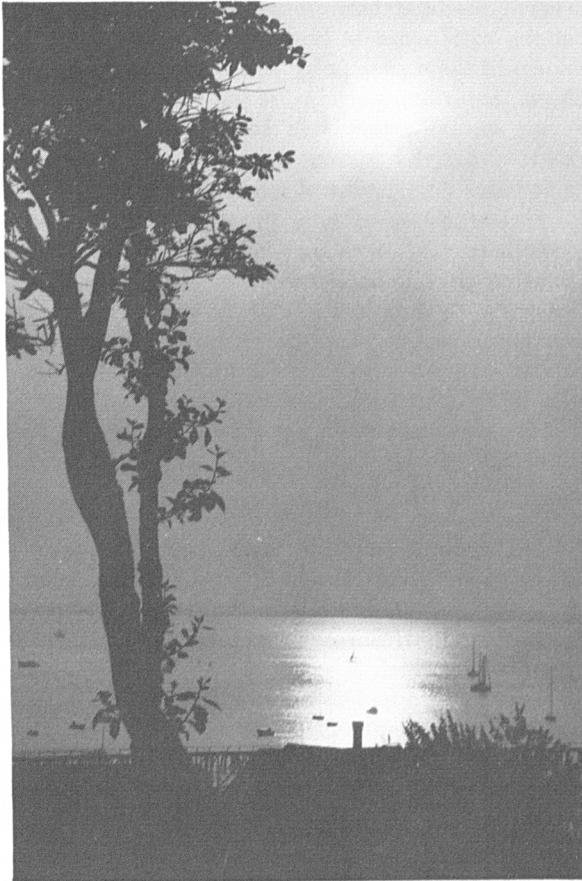
Measurements of total ozone in the atmosphere have been made with the Dobson ozone spectrophotometer since 1925, but because of the lack of suitable instrumentation, direct measurements of the vertical distribution of atmospheric ozone were not undertaken on a large scale until the beginning of the IQSY (1964-1965).

Mr. Komhyr's ozonesonde is made up of three basic subsystems—a pump, an ozone detector, and electrical circuitry.

The air pump, for which the National Bureau of Standards has already filed a patent application, is of unique design in that it is capable of operating for several thousand hours without the use of ozone-destroying lubricants. It is constructed of Teflon, a substance which is extremely inert to ozone.

A carbon-iodine sensor, an ingenious modification of a sensor recently proposed by the Beckman Instrument Company and also in line for a Government patent, is able to function undisturbed by degassing effects up to a pressure of 6 millibars. The sensor consists of a platinum cathode and a carbon anode immersed in a buffered halide solution through which the ozone-tinged air is pumped. As air is bubbled through the solution, a minute current proportional in magnitude to the amount of ozone entering the sensor per unit time, flows in the external sensor circuit. The current is impressed upon a simple, two-transistor transducer which is essentially a thermistor and negative-feedback stabilized d.c. amplifier connected to the Weather Bureau radiosonde so that it acts as a variable resistance—the resistance of the transducer varying with the sensor current.

Data telemetry is accomplished by periodic connection of the ozone sensor and transducer to the 1680, 403, or 72 mc/sec. radiosondes used by the Bureau. Calibration of the sonde telemetering system is achieved during flight by transmission of "ozone zero" and "ozone calibrate" signals at 2-minute intervals. In addition, the sonde temperature is measured at periodic intervals. ■



"Provincetown Harbor" won Leon Rothenberg first prize in the large black and white pictorial class and Best in Show of all black and white prints.

## Photo Contest Winners Announced

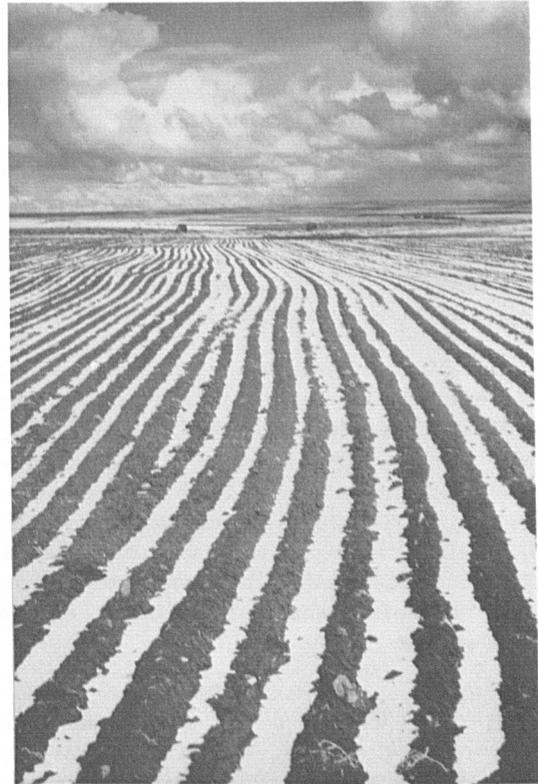
Two Weather Bureau employees won several top awards in the fourth annual Photographic Contest, sponsored by the Department of Commerce Welfare and Recreation Council, held in Washington during January.

Leon Rothenberg, Systems Development Office, won Best in Show (Judges' Choice) and two first prizes in the pictorial and portrait categories (large black and white prints). Samuel D. Green, of the Salt Lake City Regional Office, was awarded first, second, and third places in the small black and white pictorial division. His first-place photo was voted Best of Show—Public's Choice, an award new to the contest this year. A ballot box was placed in the Commerce Department lobby for the votes of visitors to the exhibition.

Prizes for the winning photographers were presented at the Department of Commerce on January 28. ■

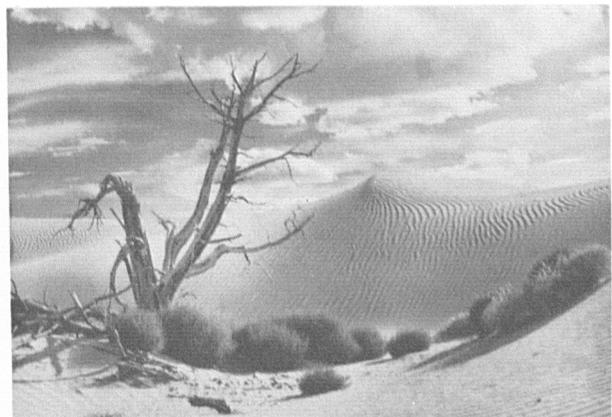


"Doves and Balconies" by Samuel Green won second prize in the small black and white pictorial class.



Samuel Green won third prize in the small black and white pictorial class with "April in San Juan County."

Leon Rothenberg's "Portrait #47" won first prize in the large black and white portrait class.



First prize for small black and white pictorial prints and Best in Show—Public's Choice went to Samuel Green's "Curve of the Dunes."

# President Asks \$117 Million for Bureau

The budget which President Johnson presented to Congress for the year beginning July 1, 1965, includes \$117,090,000 for the Weather Bureau. This is \$28,503,000 more than was appropriated for the current year (after adjustment for pay increases pursuant to P.L. 88-426).

The increase for *Salaries and Expenses* includes the operation and maintenance of new instrumental equipment and improvements in basic, public, and specialized weather services. It also provides for continuation of river and flood forecasts and warnings at a level capable of adequate response to the increasing demand for these services. Other items are the systematization of records recall, security and processing, and summarization of marine weather data.

*Research and Development* appropriations increases are for the design and development of meteorological systems, studies of sea-air interaction, and experimental meteorology. Also included are the augmentation of the weather radar laboratory, hydrologic research and development, and climatological research.

The *Special Foreign Currency* program, which uses surplus foreign currencies to supplement Bu-

reau research and development and to encourage cooperation in international meteorology, has funds requested for 1966 to be used for development of improved upper-air networks and meteorological instruments. In addition, surplus currencies are asked for research on requirements for obtaining improved meteorological information from sparse-data areas and for analysis of climatological and hydrologic data from representative regions of the world.

Funds requested in 1966 for *Establishment of Meteorological Facilities* are to continue the modernization program begun in 1956. The cost of operating and maintaining equipment installed under this appropriation is supported by Salaries and Expenses.

*Meteorological Satellite Operations* appropriations through 1965 have financed the establishment of basic ground facilities and the procurement of initial spacecraft and launch vehicles to permit implementation of a National Operational Meteorological Satellite System (NOMSS) in mid-1966 utilizing the TIROS Operational Satellite (TOS). The 1966 estimate provides for the manpower and material resources required to achieve operational effectiveness, maintain observational continuity, and improve the efficiency of the satellite system. ■

APPROPRIATION	1965	Amounts 1966	Change
Salaries and Expenses	\$66,962,000	\$69,980,000	+\$3,018,000
Research and Development	10,400,000	13,510,000	+3,110,000
Research & Development (Special Foreign Currency)	500,000	500,000	-----
Establishment of Meteorological Facilities	725,000	3,000,000	+2,275,000
Meteorological Satellite Operations	10,000,000	30,100,000	+20,100,000
<b>TOTALS</b>	<b>\$88,587,000</b>	<b>\$117,090,000</b>	<b>+\$28,503,000</b>



Top Weather Bureau staff from the Regions and the Central Office met in Washington February 15-19 to discuss plans for future observational, forecasting, and service programs at the first of a series of Regional Directors' Conferences.

## Regional Directors Meet

The first of a series of semi-annual conferences of the Weather Bureau's Regional Directors was held at the Central Office February 15-19. Programs and plans in a number of areas were discussed among the six Regional Directors and top Central Office Staff.

Field personnel attending the conference were (Region I) Karl R. Johannessen, Regional Director, and Lloyd E. Brotzman, Regional Administrator; (Region II) Wilmer L. Thompson, Regional Director, Lawrence R. Mahar, Manager, Operations Division, and Walter P. Roquemore, Regional Administrator; (Region III) Roy L. Fox, Regional Director, and Charles M. Woffinden, Manager-elect, Operations Division; (Region IV) Hazen H. Bedke, Regional Director, and Hugh D. Spangler, Regional Administrator; (Region V) Mac A. Emerson, Acting Regional Director, and James M. Beall, Manager, Operations Division; (Region VI) James W. Osmun, Regional Director, Raymond L. Belknap, Manager, Operations Division, and Robert F. Shaw, Regional User Service Representative.

Proposals at both the national and regional levels were considered, and several key decisions were made as a result of the meeting.

The Office of National Meteorological Services announced that, in line with the Bureau's overall reorganization policy of decentralization: (1) Full authority will be given to Regional Directors for Regional Office organizational matters below the Branch level. (2) Responsibility for preparation and issuance of program letters to MIC's is now delegated to the Regional Directors. (3) Regional Directors will now send reports on congressional matters directly to the Executive Officer with infor-

mation copies to the ONMS.

Among the actions requested by the Central Office were the following: Regional Directors were requested to encourage further concentration by field stations on the 0-20 hour forecast and almost total reliance on the National Meteorological Center's product for forecasts beyond about 20 hours in advance. The Directors were asked to perform critiques of Bureau actions in weather emergencies and report shortcomings to the Office of National Meteorological Services. Dr. White asked that Regional Directors develop plans (up to five years ahead) as a basis for decisions to take advantage of opportunities and to adjust for the adverse circumstances which arise unexpectedly and require rapid action.

Commitments by Central Office officials during the conference included: A Regional awards program for field development of small-scale analysis and forecasting techniques will be proposed by the ONMS. ONMS Director George P. Cressman has directed his staff to withdraw from the details of operating program direction in the field. The ONMS will still be available to assist Regional Officers on request. A new employee effectiveness rating will be conducted in May. Copies of the Federal Plan for Meteorological Services and Supporting Research will be distributed to all field stations as soon as it becomes publicly available. Consideration is being given to extending the Regional Directors' authority to approve personnel actions through GS-13 level, except that GS-13 MIC selection will be subject to review and concurrence by ONMS.

Major points of policy clarification brought out during the conference included: With respect to regional inputs to and participation in planning and system design activities, every reasonable effort will be made to obtain regional inputs in the program definition phase and at later significant stages in the planning, analysis, and design process.

Among requests by the Regional Directors for Central Office consideration were the following: (1) The Central Office should devise and authorize names for the regions in place of the present numerical designation. (2) The field needs policy and procedural guidance with respect to the continued introduction of probability forecasting in weather services. (3) Guidance was requested concerning the placement of the communications function in the Regional Office organizational structure. (4) A policy proposal for preferential reassignment for personnel returning from overseas and other isolated duty assignments was presented. ■

# School "Daze" by Harry P. Foltz

Last fall I returned to school under a Weather Bureau scholarship. Except for one quarter at Chicago University in 1958, all of my formal training in meteorology since 1944 was gained by correspondence work. When I decided to return to school, I was lucky enough to get a reasonable grade on the Bureau screening examination. Much of my spare time from then until this past fall was spent in reviewing mathematics (through differential equations) and all meteorological texts in the station library. At night, I took course work in two foreign languages.

I began my assignment at Colorado State University with plenty of uncertainty and many misgivings. These proved to be well-founded. The other graduate students have a momentum gained by previous course work, so the new student is faced with a problem similar to trying to board a fast-moving train. If you are going to make it, you must accelerate as fast as you can and approach the speed of the train before boarding.

It seems that all around me in every class everyone had a graduate degree in either mathematics, physics, or meteorology. Competition was rough, and for the first three weeks I felt I could never become competitive with them. Frankly, I won-

dered why I had the audacity to think an "old dog" could make it.

My homemade background was inadequate in most of the subjects I was taking, and as consequence I had to read reference books during the first month in order to understand the lectures. For instance, in a course concerning the formulation and solution of differential equations in scientific and engineering problems, I had to read books on electricity, beam theory, Laplace transformers, and chemistry. This additional reading, added to healthy course assignments, required in excess of 100 hours per week during my "boot camp" period.

But "all's well that ends well." I managed to survive the first quarter, and it is now much easier to keep my head above water. The environment of an academic community and the association with leaders in our science is very stimulating to me. It is an experience that I hope others from the World War II era will try—a true challenge that is deeply rewarding when met.

Meteorologists under 40 years of age certainly should consider a return to school, since the education would serve them and the Bureau for many years to come. Jump in—the water isn't too deep!

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Dr. White and Department of Commerce Assistant Secretary for Science and Technology J. Herbert Hollomon met at the Central Office in March for an extended review of Weather Bureau programs.

## In Our Mail

March 19, 1965

The Weatherman  
Flint, Michigan

Dear Mr. Weatherman,

I want it to be spring so will you please please please please please please make it spring so we can take swimming lessons and play with the other kids and slid down the slide.

from Terri——

P.S. please do it today. thank you.

# Conversion To Hydrogen Speeded

As an economy measure, the Bureau is accelerating its program of conversion to hydrogen for use in upper-air soundings.

All upper-air stations located at permanent sites in the upper-air network will convert to the use of hydrogen. Existing inflation shelters with a life expectancy of five or more years will be modified for the use of hydrogen as rapidly as possible when modification is feasible and can be accomplished at reasonable cost. Facilities at remaining stations will be converted to hydrogen when they are re-located to their permanent sites.

Stations which have completed conversion are the Test and Evaluation Laboratory at Sterling, Virginia (the first to convert in November 1963), and



As fog enveloped Washington, D. C., on February 11, area residents looked suspiciously to the roof of the Geophysical Fluid Dynamics Laboratory. The Washington Post printed this picture, with the caption "Fog Factory?" Scotching rumors of weather modification experiments, building engineers explained that the vapor came from air conditioning equipment that operates with heating facilities. High humidity made the Bureau-made "fog" more pronounced. (Photograph by Ken Jones)

the Weather Bureau stations at Nashville, Dodge City (Kansas), Green Bay, Lihue (Hawaii), Anchorage, Wake Island, Brownsville (Texas), and Pittsburgh. Work is currently in progress for conversion at Fairbanks and Majuro (Pacific). ■

## Regional Office Positions Described

Included in the Regional News sections this month are profiles of the men appointed to seven key positions in Regions I through IV. The functions of two of these positions—the Head of the Weather Analysis and Prediction Branch and the Head of the Data Acquisition Branch—were discussed in the December issue of TOPICS, on page 172.

Of the other five positions, three are in the Weather Analysis and Prediction Branch. These are the Public Service Operations Meteorologist, the Aviation Service Operations Meteorologist, and the Service Operations Evaluation Meteorologist.

In their respective areas, the Public Service Operations Evaluation Meteorologist and the Aviation Service Operations Meteorologist implement ONMS policies designed to ensure that users of public and aviation weather services receive the most effective and timely services present technology and resources can provide. In addition, it is their responsibility to make certain that field public and aviation weather service offices receive, and fully utilize, technical guidance materials available from the National Meteorological Center.

Also in the Weather Analysis and Prediction Branch is the Service Operations Evaluation Me-

eteorologist. He implements ONMS policies designed to ensure the orderly receipt and exchange of processed and raw data and, where appropriate, initiates corrective action. He monitors and verifies aspects of the prediction and warning advices in his region and determines the effectiveness of the services.

The remaining two positions—Assistant Regional Meteorologist for Techniques Improvement and Regional Radar Meteorologist—are in the Scientific Services Division under the direction of the Regional Meteorologist.

The role of the Assistant Regional Meteorologist for Techniques Improvement is to develop and recommend uniform technical procedures for making the best use of guidance material in preparing weather predictions and warnings within the region.

The Regional Radar Meteorologist's job is to develop technical programs utilizing weather surveillance radar. He is responsible for initiating and monitoring local studies on use of radar at Weather Bureau stations in his region, for organizing and supervising special radar research data-collection programs for other agencies, and for recommending improvements in Bureau-wide methods of radar utilization. ■



*Head, Weather Analysis and Prediction*

Walter G. Siebert, Head of the Weather Analysis and Prediction Branch, has worked in the International Aviation Unit at Kennedy Airport, New York, since 1959. For the past three years, he has been a Leading Aviation Forecaster with the Unit.

After serving in the Army and the Air Force from 1945 to 1948, Mr. Siebert attended Los Angeles City College and the University of California at Los Angeles, graduating in 1953 with a B.A. in meteorology. He is now completing work for his master's degree at New York University.

Before joining the Weather Bureau in 1959, Mr. Siebert was a senior forecaster in Trans World Airlines' Wind Analysis Unit at Kansas City, Missouri.



*Head, Data Acquisition*

Henry Rockwood, who now heads the Data Acquisition Branch, was in charge of the Pittsburgh Weather Bureau Office from 1946 until his recent transfer to the New York Regional Office. Before entering the Weather Bureau, Mr. Rockwood conducted streamflow studies for the U.S. Geological Survey and worked in the Hydrologic Research Division of the Soil Conservation Service. In 1937, he received a Weather Bureau appointment as As-

sistant Hydrologic Engineer at Pittsburgh and, two years later, transferred to Fort Worth where he served as Hydrologic Engineer.

A 1931 graduate of Harvard Engineering School with a B.S. in industrial chemistry, Mr. Rockwood has also studied at Massachusetts Institute of Technology, U.S. Department of Agriculture Graduate School, and Texas Christian University. He is a member of the American Meteorological Society, the American Geophysical Union, the American Society of Civil Engineers, and the American Association for Advancement of Science.



*Assistant Meteorologist for Techniques Improvement*

The Assistant Meteorologist for Techniques Improvement, Carlos R. Dunn, comes to the new position from the Systems Development Office, where he was a Forecast Development Analyst. He spent his first eight years in the Weather Bureau with the Extended Forecast Division. In 1960, he transferred to the Office of Forecast Development and remained on its staff until the Weather Bureau reorganization.

An Air Force veteran, Mr. Dunn attended the University of Vermont and the University of Chicago, receiving his master's degree in meteorology in 1952. He is a member of the American Meteorological Society.



*Public Service Operations Meteorologist*

Region I's Public Service Operations Meteorologist is John R. Clark, a former Navy aerological

officer who has been with the Bureau since 1948.

He has a bachelor's degree from the University of Wisconsin, a master's degree from Marquette University, and studied meteorology at the University of California at Los Angeles while in the Navy.

After teaching science in Wisconsin schools, Mr. Clark joined the Weather Bureau at Chicago, where he became an Aviation Forecaster. In 1955, he moved to the National Weather Analysis Center and for the past seven years has been a Principal Assistant in NMC's Analysis and Forecast Division.



#### *Aviation Service Operations Meteorologist*

George A. Yount, the Aviation Service Operations Meteorologist, has been Supervising Quality Control Officer in the New York Regional Office since June 1964.

After three years in the Army Air Corps during World War II, Mr. Yount entered the Weather Bureau as a Meteorological Aid at Jacks Creek, Tenn. He served at Anniston, Ala., and Bristol, Tenn., before returning to the Air Force in 1950. While in the Air Weather Service, he attended the Air Force Meteorological School at Oklahoma A & M. Mr. Yount has also studied at East Tennessee State College and the University of Texas.

He rejoined the Weather Bureau in 1954 at the Miami Weather Bureau Airport Station, and in succeeding years he served at Austin, San Juan, and St. Louis—where he was Quality Control Officer—before moving to the New York Regional Office last year.



#### *Service Operations Evaluation Meteorologist*

The Service Operations Evaluation Meteorologist, Richard Fay, entered the Weather Bureau in 1956 at Woods Hole, Mass. In 1959, he moved to the Boston Weather Bureau Airport Station, where he served as Research Forecaster and Forecast Analyst.

A 1940 graduate of Harvard with a degree in biology, Mr. Fay became a weather officer in the Air Force after completing the "A" course in meteorology at the Massachusetts Institute of Technology. At the end of World War II, he went to work for American Overseas Airlines, serving as a forecaster at New York and later at Shannon, Ireland. From 1949 to 1956, he was a civilian meteorologist at the U.S. Air Force Weather Central in Washington, D. C.

*Biographies of other appointees in the New York Regional Office will appear in later issues of TOPICS.*



Robert S. Ingram, MIC at the Weather Bureau Airport Station at Burlington, Vermont, doesn't seem too worried as students protest the lack of snow on the area's ski slopes. This January 8 demonstration ended peaceably as the pickets resigned themselves to the prevailing weather conditions.

#### **LENGTH OF SERVICE AWARDS New York Regional Office**

**40-YEAR AWARD**  
John A. Cummings  
WBAS Charleston, S.C.

**35-YEAR AWARDS**  
James W. Anderson  
WBAS Philadelphia

Frank Gemmill III  
WBAS Newark  
Sherwood L. Jones  
WBAS Raleigh  
Pierce S. Rosenberg  
WBAS Philadelphia  
Edward Sable  
WBAS Boston

**25-YEAR AWARDS**

Joseph J. Adamo  
WBSS Wallops Island, Va.  
Eugene R. Alexander  
WBAS Richmond  
Robert E. Lautzenheiser  
WBSC Boston  
Philip H. Lord, Jr.  
WBAS Portland, Maine  
James A. Morrell  
WBAS Columbia, S.C.  
F. Howard Rexroad  
WBAS Boston  
William H. Reynolds  
WBAS Boston  
Elmer J. Travers  
WBAS New Haven  
George Whiteley, Jr.  
WBO Trenton

Herman J. Jordan  
JFK Airport, New York  
Raymond A. Manske  
RO New York  
Wilbur J. Moyer  
WBAS Baltimore  
Joseph Prelec, Jr.  
WBAS Cleveland  
Ben H. Russler  
RO New York  
Olga Bell Shirko  
JFK Airport, New York  
Patrick A. Walsh, Jr.  
RO New York

**15-YEAR AWARDS**

Patrick T. Dugan, Jr.  
WBAS Pittsburgh  
Edward W. Gill  
JFK Airport, New York

**20-YEAR AWARDS**

Marie D. Fellechner  
WBAS Washington, D. C.

for Meritorious Service. Many of his articles have been published in agricultural journals.



*Head, Data Acquisition*

Hoye S. Dunham, Head of the DATAC Branch at Fort Worth, began his Weather Bureau career at Springfield, Missouri, in 1928. Since that time, he has served at Wausau (Wis.), San Juan, Tampa, and at WBAS Austin, where he worked from 1942 until his recent appointment.

He has attended Southwest Missouri State, the University of Tampa, the University of Texas, and St. Thomas University in Houston.

**NEWS** from Region II



*Head, Weather Analysis and Prediction*

The new head of the WXAP Branch at Fort Worth is John A. Riley, Jr. After serving as a forecaster with the Army Air Corps during 1943 to 1946, he joined the Weather Bureau in 1947 at Washington, D. C. He worked at New Orleans, El Paso, Des Moines, Stoneville (Miss.), and most recently was Area Agricultural Meteorologist at Memphis.

Mr. Riley has a B.A. degree in geology from the University of Kansas City and has attended M.I.T., Iowa State College, and the U.S. Department of Agriculture Graduate School. In 1963, he was awarded the Department of Commerce Silver Medal



*Assistant Meteorologist for Techniques Improvement*

Jeter Pruet, the Assistant Meteorologist for Techniques Improvement, comes to his new position from WBAS Oklahoma City, where he was MIC for several years. After serving in the Air Force during World War II, Mr. Pruet entered the Bureau at Fort Worth in 1946 and since that time has worked at Pittsburgh, St. Louis, Kansas City, Shreveport, and Oklahoma City.

He has a B.S. degree in engineering from Arkansas State College, an M.S. degree in business administration from St. Louis University, and an M.S. degree in meteorology from the California Institute of Technology. A member of the American Meteorological Society, he has published articles in *The NAATS Report*.



*Aviation Service Operations Meteorologist*

Joe M. Sassman brings more than 20 years of experience in aviation weather service to his position as Aviation Service Operations Meteorologist.

From 1942 until 1956, he was a pilot and aerological officer with the U.S. Navy.

Joining the Weather Bureau in 1956, Mr. Sassman worked in the Short Range Research Forecasting Unit and in the Pilot-to-Forecaster Unit at Washington, and he has been Quality Control Officer at Jacksonville and Fort Worth. He has a B.S. degree in meteorology from the U.S. Naval Postgraduate School.



*Service Operations Evaluation Meteorologist*

Harold S. McCrabb, Service Operations Evaluation Meteorologist, has a B.B.A. degree from the University of Texas and an M.S. degree in mathematics from Trinity University. He joined the Weather Bureau in 1941 at San Antonio as a weather observer and radiosonde operator. He has worked as FAWS forecaster at New Orleans and as FAWS Aviation, and State forecaster at San Antonio.

During World War II, Mr. McCrabb was a weather officer in the U.S. Army Air Corps and during the Korean conflict served with the U.S. Air Force. He is a professional member of the American Meteorological Society.



*Public Service Operations Meteorologist*

The new Public Service Operations Meteorologist is Robert M. Ferry, who joined the Weather Bureau in 1946 after serving as a weather officer in the U.S. Air Force during World War II. He worked at Honolulu and Washington and most recently was MIC at Tampa.

Mr. Ferry has a B.S. degree in chemical engineering from Tri State College (Angola, Indiana) and has done graduate work in meteorology at the University of Chicago.



*Regional Radar Meteorologist*

The Regional Radar Meteorologist is Robert L. Smith, formerly MIC at WBO Apalachicola, Florida. Mr. Smith joined the Weather Bureau in late 1947 at Del Rio, Texas, and has worked at Brownsville, Texas; Lake Charles, Louisiana; Wichita, Kansas; and at the Central Office. Also, he was assigned to the Doppler Project at Wichita Falls, Texas.

A Navy veteran of World War II, Mr. Smith has a B.S. degree in meteorology from Texas A & M College.

*Biographies of other appointees in the Fort Worth Regional Office will appear in later issues of TOPICS.*

*Oklahoma City Station Presents Citation*

Jeter Pruett, MIC at Oklahoma City (now Region II Assistant Meteorologist for Techniques Improvement), presented a U.S. Weather Bureau Special Service Citation to the Oklahoma Aeronautics Commission in a meeting held during February. The award was for "a significant contribution to the weather consciousness of the pilot community in Oklahoma" by holding a pilot's weather seminar at the University of Oklahoma campus last summer.

*OIC's Widow Dies at Age 100*

Mrs. N. D. Lane, widow of the first Observer in Charge of the El Paso Weather Bureau, died in El Paso on February 4, at the age of 100. Mr. Lane was a sergeant in the Signal Corps and when the weather service was transferred to the Weather Bureau in 1891, he became Observer in Charge at El Paso, where he remained until his retirement in 1916. Mr. Lane faithfully recorded weather observations at his station, remarking in a letter dated March 27, 1901, that he had worked ten years without one day's leave. This devotion to duty meant that one day in February 1892, he continued to take temperature readings during a fire in the building next to the weather office; the temperatures (unofficial) was a high 110.3° and low of 41.2° F.

**LENGTH OF SERVICE AWARDS  
Fort Worth Regional Office**

**40-YEAR AWARDS**

Malcolm C. Harrison  
WBAS Dallas  
Leon C. Walton  
WBAS San Angelo, Texas

Ernest W. McCracken  
WBAS Memphis  
Joseph L. Rash  
WBAS Little Rock  
Russell B. Selleck  
WBAS Albuquerque

**35-YEAR AWARDS**

Paul R. Jones  
RFC Tulsa  
Henry R. McQueen  
WBAS Atlanta  
Ray T. Sherouse  
WBO Lakeland, Fla.

**20-YEAR AWARDS**

Harold E. Cross  
WBAS Houston  
Kenneth H. Dieter  
WBAS Jacksonville  
Thomas N. Kyle  
WBAS Oklahoma City  
John W. Measells  
WBASO Jackson, Tenn.  
Harold B. A. Peterson  
WBO New Orleans  
Richard E. Splaine  
NHC Miami

**25-YEAR AWARDS**

Donald G. Coffman  
WBAS Brownsville  
John H. Cornish  
RFC Tulsa  
Laurence H. Donahue  
RO Fort Worth  
Leonard E. Greeson  
WBO New Orleans  
George T. Gregg  
WBAS Albuquerque  
Albert J. Hinkle  
WBAS Fort Worth  
Lawrence E. Hughes, Jr.  
WBAS Tallahassee  
Daniel W. Krueger  
(Fire-Weather) Macon

**15-YEAR AWARDS**

Jesse R. Aldridge, Jr.  
WBAS Montgomery  
Lewis M. Croom  
WBAS Dallas  
Charles E. Ridge  
WBO New Orleans  
Willie R. Whiddon  
WBAS Port Arthur



A Weather Bureau Special Service Award was made to the Communications Division of the Oklahoma Department of Public Safety in recognition and appreciation of public services rendered by the highway patrol, especially in storm warnings. Pictured at the awards ceremony are (left to right) Glenn Smith, Supervisor of the Oklahoma Highway Patrol Communications Net Control at Edmond, Oklahoma; Gerald Carter, Radar Supervisor at WBAS Oklahoma City; Jeter Pruett, currently Region II Assistant Meteorologist for Techniques Improvement; and Commissioner Bob Lester of the Oklahoma Department of Public Safety in Oklahoma City, where the presentation was made. Photo by Oklahoma Department of Public Safety.

**NEWS** from Region III



*Head, Weather Analysis and Prediction*

Robert C. Baskin, the new Head, WXAP Branch, at Kansas City, entered the Weather Bureau in 1946 at North Platte, Nebraska, as a radiosonde operator. Later that same year he transferred to the Flight Advisory Weather Service at Kansas City, where he has held various forecasting positions until his present assignment.

He has a B.A. degree in mathematics from Hastings College and has attended the University of Nebraska, the University of Kansas City, the University of Maryland, and the University of Miami. During World War II, he served with a weather squadron in the U.S. Army Air Corps.



*Head, Data Acquisition*

The Head of the DATAC Branch is Alfred A. Skrede, former MIC at Bismarck, North Dakota. He worked as an airway observer prior to joining the Bureau in 1940 at Williston, North Dakota, and also served at Grand Rapids, Michigan, before going to Bismarck.

A veteran of World War II, Mr. Skrede attended the University of North Dakota.



*Assistant Meteorologist for Techniques Improvement*

Wayne E. Sangster returns to his native state of Kansas in his new position as Assistant Meteorologist for Techniques Improvement. He has a B.S. degree in agricultural engineering from Kansas State University and M.S. and Ph.D. degrees in meteorology from the University of Chicago. During 1953 to 1956, he served as a weather officer in the U.S. Air Force, and then was a Research Assistant at the University of Chicago until he joined the Weather Bureau in 1960. From that time until his recent assignment, he engaged in research in short-range dynamical weather prediction techniques at the Geophysical Fluid Dynamics Laboratory in

Washington.

A member of Phi Kappa Phi, Sigma Xi, and Sigma Tau, Dr. Sangster also belongs to the American Meteorological Society and the Royal Meteorological Society.



*Aviation Service Operations Meteorologist*

The Aviation Service Operations Meteorologist, Howard R. Martin, holds a commercial pilot certificate and has logged over 3,000 hours of flying time. After teaching science and coaching athletics in Nebraska and Kansas high schools, and later serving as a weather officer in the Air Force during World War II, he entered the Bureau in 1947 at Kansas City, where he has been stationed since that time. Originally assigned to the Flight Weather Service, he has served as an aviation forecaster and quality control officer. Most recently he was regional supervisory quality control officer.

Mr. Martin holds both B.S. and B.A. degrees from Nebraska Wesleyan University.



*Regional Radar Meteorologist*

Norman E. Prosser, the Kansas City Regional Radar Meteorologist, joined the Weather Bureau in 1957 after graduating from the University of Missouri. He worked for a while as an assistant for the Tornado Research Airplane Project and then took leave to obtain an M.S. degree from Florida State University. Returning to the Bureau in 1960, he became research forecaster for the National Severe Storms Project and two years later was

made forecaster for the Severe Local Storms unit. Mr. Prosser is a professional member of the American Meteorological Society and a member of Gamma Sigma Delta.

*Biographies of other appointees in the Kansas City Regional Office will appear in later issues of TOPICS.*

**LENGTH OF SERVICE AWARDS**  
Kansas City Regional Office

**25-YEAR AWARDS**

Paul S. Billey  
WBAS Scottsbluff, Nebr.  
Morris B. Braswell  
WBAS Topeka  
Percy N. Eland  
WBAS Topeka  
John V. LePage  
WBAS Green Bay  
Richard E. Myers  
WBO Lincoln  
Mary L. Wollensack  
WBAS Denver

**20-YEAR AWARDS**

John J. Condon  
WBFC Chicago  
Willis S. Randall  
WBAS Colorado Springs  
Oren A. Tankersley  
WBAS Cheyenne

**15-YEAR AWARD**

Robert L. Dolan  
WBAS Omaha

**NEWS** from Region IV



*Head, Weather Analysis and Prediction*

Halbert E. Root, the new Head, WXAP Branch, at Salt Lake City, joined the Weather Bureau at Sandberg, California, in late 1938 after working two years as a geologist for International Geophysics, Inc. He served in Alaska during the war years and then worked as a field aide for the Bureau in Regions III and IV. He was a forecaster in fire-weather and international aviation and was a research forecaster at WBAS San Francisco prior to his current assignment.



*Head, Data Acquisition*

Head of the DATAC Branch is Harry L. Elser, who has a B.S. degree from Montana State College and has attended the University of Chicago. After serving with the U.S. Air Force in the Air Weather Service, he entered the Bureau in late 1946, working a short time at the Central Office. His Weather Bureau assignments have been at Great Falls and Helena, Montana, and at El Paso, Texas, where he was aviation forecaster and then state forecaster. He returned to Great Falls as Quality Control Officer during 1962 to 1964, when he came to his present position.

A member of the American Meteorological Society and the Montana Pilot's Association, he has had articles published in *Weatherwise* and several magazines dealing with aviation.



*Assistant Meteorologist for Techniques Improvement*

Philip Williams, the Assistant Meteorologist for Techniques Improvement, has been stationed at Salt Lake City since 1949, serving as forecaster, FAWS supervisor, and research meteorologist at the Weather Bureau Airport Station, prior to his cur-

rent appointment to the Regional Office.

Mr. Williams entered the Bureau at Reno, Nevada, as a junior observer in 1938 and afterwards worked at Seattle and Salt Lake City. During 1943 to 1944, he worked with the Northern Hemisphere Map Project at Pasadena, then came to the Analysis Center in Washington, where he remained until 1948.

He has a B.A. degree in physics from the University of California at Berkeley and an M.A. degree in meteorology from U.C.L.A. A professional member of the American Meteorological Society, Mr. Williams has published numerous articles on synoptic meteorology and forecasting.



#### *Service Operations Evaluation Meteorologist*

The new Service Operations Evaluation Meteorologist is Chester L. Glenn. After teaching high school science for two years, he entered the Weather Bureau in 1939 as a junior observer at Havre, Montana. Subsequently, he has worked at Ellensburg, Washington, and Billings and Great Falls, Montana. Most recently, he was research meteorologist at WBAS Denver.

Mr. Glenn attended Whitworth College and has a B.S. degree from the University of Washington and an M.S. degree in meteorology from New York University. He is a professional member of the American Meteorological Society.



#### *Aviation Service Operations Meteorologist*

Charles W. Inskip, Aviation Service Operations Meteorologist, entered the Weather Bureau in 1961

after retiring as Lt. Colonel from the U.S. Air Force. Serving in the military for 22 years, he was assigned as pilot for the Commanding General on Staff, Third Air Force, and as Commander of Special Air Mission at Ft. Knox, Kentucky. He was a Unit Commander and Weather Officer in the Far East and in Europe and was a team chief at U.S.A.F. weather centrals, where he was responsible for Northern Hemisphere analyses and forecasts. For five years he was Commander of a weather unit supporting a SAC Bomb Division, for which he received an Air Force Commendation award.

Previous to his current position, he was Assistant Chief of the Flight Services Quality Control Section at the Central Office. A professional member of the American Meteorological Society, he has a B.S. degree in general engineering from the University of Illinois and has taken special training courses in the military.



#### *Regional Radar Meteorologist*

Herbert P. Benner, the Regional Radar Meteorologist, received his academic training in meteorology, hydrology, and radar meteorology by attending Allan Hancock College, Sacramento City College, the University of Miami, and the U.S. Department of Agriculture Graduate School.

After serving in the Navy for two years, Mr. Benner joined the Bureau in 1948 at Mt. Shasta, California, and later was assigned to WBAS Santa Maria, California. Following another tour of duty with the Navy at the Fleet Weather Central, San Francisco, during the Korean conflict, he was selected as one of the five radar meteorologists to staff the WSR-57 radar station at Sacramento. Most recently he has been supervising radar meteorologist at WBO Sacramento. He is a professional member of the American Meteorological Society.

*Biographies of other appointees in the Salt Lake City Regional Office will appear in later issues of TOPICS.*

**LENGTH OF SERVICE AWARDS**  
Salt Lake City Regional Office

**35-YEAR AWARD**

Archie Bloom  
WBO Seattle

**25-YEAR AWARDS**

John W. Cline  
WBASO Twin Falls  
Ralph L. Cutshall  
WBAS Kalispell  
John W. Hamilton, Jr.  
WBAS Great Falls  
Ben W. Harlin  
WBRS Fort Huachuca  
Alan H. Jones  
WBO Wenatchee  
Adolf V. Kolitsch  
WBAS Seattle-Tacoma  
Barton F. Pinson  
WBAS Oakland

**20-YEAR AWARDS**

Patricia A. Bell  
WBRO Salt Lake City

Edwin D. House  
WBAS Medford

**15-YEAR AWARDS**

Charles A. Bejcek  
WBRS Las Vegas  
Edwin O. Bowman  
WBO Vandenberg AFB  
Robert W. Brentano  
PWP San Francisco  
Howard L. Eitel  
Pt. Mugu  
Catherine H. Kesler  
WBRO Salt Lake City  
Billy R. Reese  
WBRO Salt Lake City  
James A. Speidel  
WBRS Idaho Falls  
Walter A. Syroid  
WBAS Missoula



The Weather Bureau construction party, led by natives of Wotje Island, emerges on the east side of the island after plowing through the jungle trail. (Photo by Steve Boyd)

*Flood at Johnston Island Weather Station*

Observers at WBAS Johnston Island noticed a small lake forming outside their building at the airport as a heavy rain fell during the morning hours of January 12. They began to worry when water came through the conduit and under the doors. Wading through the water minus shoes and socks, the Bureau employees managed to move equipment and lower desk and cabinet drawers to high, dry ground. Power was shut off in the evening because of danger of electrocution and fire, but surface observations continued; they recorded 9.25 inches of precipitation in less than 14 hours.

Radiosonde observations were missed for two days but power was soon restored and equipment put in working order. TIC Donald Billman reports that damage was less than \$25 because of the quick action by personnel.

*Mysterious Dog Appears on Volcano in Hawaii*

A little white dog, weighing only about 10 to 15 pounds, has made his home on the barren terrain of Mauna Loa, one of two remaining active volcanoes in Hawaii. He is usually spotted near the Weather Bureau Research Station located in lava wastes at the 11,150 foot elevation level. The dog made his first two appearances just prior to volcanic eruptions in 1959 and 1961, but he has appeared since without heralding eruptions. Part of the mystery surrounding the little dog is how he sustains himself. The slopes of Mauna Loa are barren, offering no food except that left by the Bureau personnel there—and this often goes untouched for months at a time.

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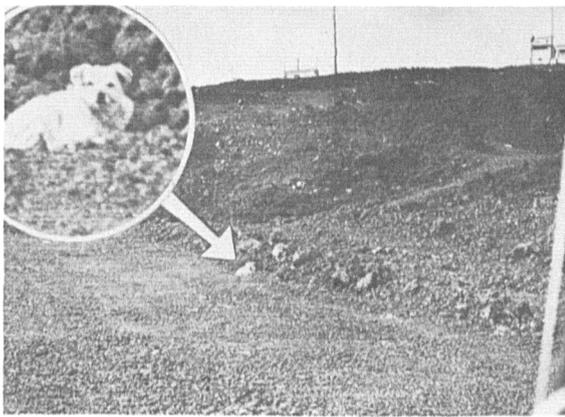
**NEWS** from Region VI

*Automatic Weather Reporting Station Installed on Pacific Island*

An automatic weather reporting station has been installed on Wotje Island in the Marshall Islands, and another soon will be established on Jabor Island. These remote stations are "up-weather" from Kwajalein Island and will permit more accurate forecasts and storm detection for the Kwajalein Atoll. The stations report automatically by radio every six hours, giving wind speed and direction, temperature, and pressure.

To install the station on Wotje, Bureau employees from Kwajalein and accompanying construction engineers hired Marshallese on the island to lead them through a heavy forest jungle. They were especially careful to follow the native trail since the island is still infested with land mines left by the Japanese Army in World War II. A demolition team with the group found and exploded some fifteen pieces of ordnance during the three-day stay on the island, but stated they would need another three weeks to clear out all known explosives left.

The Wotje Island station began operation on February 21, 1965.



The mysterious little white dog on Mauna Loa in Hawaii, photographed near the Weather Bureau Research Station (upper right corner). (Honolulu Star-Bulletin Photo)

**LENGTH OF SERVICE AWARDS  
Honolulu Regional Office**

**25-YEAR AWARDS**

Myron H. Kerner  
WBRO Honolulu  
Arthur V. Pierson  
WBRO Honolulu

Saul Price  
WBRO Honolulu  
Florence E. Yasuhara  
WBRO Honolulu

**20-YEAR AWARDS**

Kazue Anzai  
WBAS Honolulu

**15-YEAR AWARD**

Herbert T. Hirata  
WBRO Honolulu

**LENGTH OF SERVICE AWARDS  
Central Office**

**35-YEAR AWARDS**

Richard Cherry  
Adm. Oprs. Div.  
Charles Reeves  
Comm. Div.

**30-YEAR AWARDS**

Guy Dorsey  
Pers. Div.  
Kenneth Miles  
NWSC

**25-YEAR AWARDS**

Dever Colson  
Systems Dev. Off.  
Robert Gentry  
NHRL Miami  
John Hildebrand  
NWSC  
James O'Connor  
NMC  
Robert Ryan  
NWSC

Willard Shinnors  
MR  
Robert Simpson  
NMS  
Curtis Spiker  
Adm. Oprs. Div.  
Joseph Szokolszky  
Fac. & Maint. Div.

**20-YEAR AWARDS**

Mary Bates  
NMC  
George Cressman  
NMS  
Robert L. Daniels  
RFF Miami  
Marguerite Hodges  
MR  
Lester Hubert  
NWSC  
Billy Lewis  
NMC

Jay Reynolds  
Pers. Div.  
Charles Roberts  
SDO  
Robert Tomes  
NMC  
Leon Vogel  
Adm. Oprs. Div.  
Marie Weight  
Climat.

**15-YEAR AWARDS**

Donald Bowyer  
NMC  
Wilma Eckstorm  
Hydro.  
Ronald Finnican  
NMC  
George Kessler  
NMC  
Kathryn Stepanek  
NWSC

## Retirements

**NATHAN KRONBERG,**

a Meteorologist and South Carolina's State Climatologist for 10 years, retired on December 30 after 44 years of Government service. He was most recently located at the Weather Bureau Airport Station in Columbia, South Carolina, and has also worked in San Juan and New Orleans during his 40-year tenure with the Bureau. He began his career as a Junior Observer, going on to become a Meteorologist and State Climatologist. Mr. Kronberg's address is 3419 Moss Avenue, Columbia, South Carolina.

**ALLEN L. EAGLES,**

a Meteorological Technician at the Weather Bureau Airport Station in Florence, South Carolina, retired on March 11 after nearly 20 years of service with the Weather Bureau. He joined the Bureau as an Observer in Goshen, Indiana. He has also served in Madison, Wisconsin; Sandusky, Ohio; Cleveland, Ohio; Spartanburg, South Carolina; Greenville, South Carolina; and Columbia, South Carolina. Mr. Eagle's address is 1713 Citadel Street, Florence, South Carolina.

# Retirements

**CHARLES B. MUNCH,**

a General Supply Assistant for the past six years in the Administrative Services Section of the National Weather Records Center in Asheville, retired on February 28 after 35 years of Government service. Mr. Munch has served the Bureau in New Orleans; Montgomery, Alabama; Mobile, Alabama; Macon, Georgia; and Chattanooga, Tennessee; as an Observer, Meteorological Aid, and Meteorological Technician. His address is #2 Panorama Drive, Route 4, Asheville, North Carolina.

**TRENT V. HILKEY,**

a Meteorologist at the Weather Bureau Airport Station in Detroit, retired on February 7 after 31 years of service with the Weather Bureau. He began his career as an Observer at the Cleveland Airport and later served for 20 years as a Meteorologist at the Detroit Airport. Mr. Hilkey's address is 2218 Academy, Dearborn, Michigan.

**CLARENCE L. SMALLEY,**

a Meteorologist at the Weather Bureau Airport Station in San Francisco, retired on January 31 after 35 years of Weather Bureau employment. He began his career as an Observer in Pueblo, Colorado, but soon moved to the San Francisco area, where he remained for the rest of his career. Mr. Smalley's address is 372 Elm Street, San Carlos, California.

**ROBERT J. EWERS,**

a Meteorological Technician at the Weather Bureau Airport Station in Aberdeen, South Dakota, retired on January 21 after 26 years of Weather Bureau service. He joined the Bureau in 1938 as an Observer at Lander, Wyoming, and also worked in Missoula, Montana; Lakeview, Oregon; La Grande, Oregon; and Medford, Oregon. Mr. Ewer's address is 2119 4th Avenue, S.E., Aberdeen, South Dakota.

**JAMES K. MCGUIRE,**

Area Climatologist for 12 northeastern states since 1955, retired on January 28 after nearly 21 years of Government service. Dr. McGuire received his B.A., M.A. and Ph.D. degrees from Fordham University in New York City. He began his Bureau career as a Meteorologist in the Forecast Research Division, Washington, D.C., and moved to positions in Boston and later to New York City, where he spent most of his career. Dr. McGuire's address is 467 Main Street, in Northport, New York.

**VIVIAN GORDON,**

a Budget Clerk in the Budget and Accounting Division of the Central Office, retired on March 9 after 22 years of Federal service. Before coming to the Bureau in 1946 as a clerk-stenographer, Mrs. Gordon

worked in the Office of Price Administration. Her entire Government career has been in the Washington, D.C., area. Mrs. Gordon's address is 2115 Pennsylvania Avenue, N.W., Washington, D.C.

**MARGARET BRENNER,**

a Secretary in the Scientific Services Division of the Regional Office in Kansas City, retired on March 15 after 21 years of Federal service. Before coming to work for the Bureau in 1946, she was employed by the National War Labor Board as a Clerk-Stenographer. Her service in the Bureau has been entirely in the Kansas City area, where she worked as a Secretary for the River Forecast Center, the Regional Administrative Office, and the Weather Bureau Forecasting Center. Mrs. Brenner's address is 101 N. Parker Street, Olathe, Kansas.

**C. EUGENE SHEPHERD,**

the Meteorologist in Charge at the Weather Bureau Airport Station in Reno, Nevada, retired on March 31 after 36 years of Weather Bureau service. He began his career as an Observer in Phoenix, Arizona. He moved to San Diego and then to Reno, where he spent the past 20 years as a Meteorologist. Mr. Shepherd's address is 2100 Humboldt Street, Reno, Nevada.

**HARRY V. MYERS,**

a Meteorologist and the Agricultural Forecaster at the WBAS in Grand Rapids, Michigan, retired on March 7 after 35 years of Weather Bureau service. In 1929 Mr. Myers entered the Bureau as an Observer in Davenport, Iowa. Since then he worked in Springfield, Illinois; Detroit, Michigan; Fort Wayne, Indiana; and Lynchburg, Virginia, where he was the Meteorologist in Charge for seven years. Mr. Myer's mailing address is c/o H. V. Myers, Jr., 724 Clair Avenue, Inkster, Michigan.

**FRANKLIN K. STOUT,**

a Meteorological Technician at the Weather Bureau Airport Station in Columbus, Ohio, retired on April 2 after 38 years of service in the Weather Bureau. In 1926 he began his career as an Observer in Cincinnati, Ohio. He also worked in Goshen, Indiana, and since 1947 he has been at the WBAS in Columbus, Ohio. Mr. Stout's address is 3696 Etna Street, Whitehall, Ohio.

**SAMUEL MILLER,**

a Meteorologist at WBAS Los Angeles, retired December 30 after 24 years of Federal service. Mr. Miller joined the Weather Bureau as a Junior Observer at San Pedro, Calif. He also served at Burbank, Calif. Mr. Miller's address is 707 Priscilla Lane, Burbank, California.

**WILLIAM T. PULLEN, JR.**, a Meteorological Technician with the Office of Climatology at the Central Office, retired December 30 after 35 years of Federal service. Mr. Pullen joined the Weather Bureau as a Telegrapher at the Central Office in 1931. He also served in Chattanooga, Tenn. Mr. Pullen's address is 21 Morning-side Drive, Alexandria, Virginia.

**THOMAS A. LAWLER**, a Supervisory Meteorological Technician at WBAS Los Angeles, retired December 19 after 44 years of Weather Bureau service. Mr. Lawler joined the Bureau in 1920 as an Assistant Observer at Ellendale, N. Dak. He also served at Kansas City, Mo., and Helena, Mont. Mr. Lawler's address is 5603 Marialinda Street, Torrance, California.

**CLARENCE E. SKILLMAN**, a Meteorologist at WBAS Atlanta, Ga., and MIC of the WBO at Thomasville, Ga., from 1955 to 1964, retired December 30 after 34 years of Federal service. Mr. Skillman joined the Weather Bureau as a Junior Observer in 1930 at Raleigh, N. C. He also served at Spartanburg, S.C.; Miami, Fla.; Montgomery, Ala.; and Lakeland, Fla. Mr. Skillman's address is Route #3, Box 204, Warrenton, North Carolina.

**JOHN P. REA**, an Instrument Maker (Leader) with the Central Office's Equipment Development Laboratory, retired December 30 after 30 years of Federal service. Mr. Rea joined the Weather Bureau's Instrumental Engineering Division in 1951 after working some years for the Navy Department. His entire Bureau career was spent at the Central Office. Mr. Rea's address is 7219 Flower Avenue, Takoma Park, Maryland.

**RAYMOND E. DUNCAN**, a Meteorological Technician at the Weather Bureau Office at Vandenberg AFB, Calif., retired December 25 after 35 years of Federal service. Mr. Duncan joined the Bureau in 1929 as a Junior Observer in Boise, Idaho. He also served at Pocatello, Idaho; Kalispell, Mont.; Tatoosh Island, Wash.; Troutdale, Oreg.; and Santa Maria, Calif. Mr. Duncan's address is 1105 S. College Drive, Santa Maria, California.

**WILLIAM A. MULDOON**, a Meteorological Technician at WBAS Burlington, Iowa, retired December 30 after 26 years of Federal service. Mr. Muldoon joined the Weather Bureau as an Under Observer in Springfield, Ill., in 1938. He also served in Dubuque, Iowa, and Sheridan, Wyo. He transferred to Burlington in 1948. Mr. Muldoon's address is 1720 Mark Lane, Burlington, Iowa.

**EDWARD F. HAROLD**, an Electronic Technician at the Weather Bureau Airport Station in Columbus, Ohio, retired Decem-

ber 29 after 39 years of Federal service. Mr. Harold joined the Bureau as a Minor Observer in Columbus in 1925. He spent his entire Weather Bureau career at Columbus. Mr. Harold's address is 1673 Simpson Drive, Columbus, Ohio.

**SARAH I. McREYNOLDS**, a Meteorological Technician at WBAS St. Joseph, Mo., retired December 30 after 22 years of Federal service. Mrs. McReynolds joined the Weather Bureau at St. Joseph as a Junior Observer in 1942. She also served at Grand Rapids. Mrs. McReynolds' address is 1120 N. 24th Street, St. Joseph, Missouri.

**GEORGE L. CANADAY**, a Meteorologist (Marine Observational Supervisor) at the Weather Bureau Office in New Orleans, retired December 29 after 43 years of Bureau service. Mr. Canaday joined the Bureau as a Messenger Boy at Charleston, S.C., in 1921. He also served in Chicago, Ill. He was stationed at New Orleans for 37 years. Mr. Canaday's address is 130 Alden Place, New Orleans, Louisiana.

**JOHN W. COOVER**, an Administrative Assistant in the Data Acquisition Division at the Central Office, retired December 28 after nearly 42 years of Federal service. Mr. Coover joined the Weather Bureau in 1923 as a Press Feeder. He spent his entire Weather Bureau career at the Central Office. Mr. Coover's address is 4631 Van Ness Street, N.W., Washington, D.C.

**JONATHAN O. BECKER**, a Meteorological Technician at WBAS San Diego, retired December 30 after 31 years with the Weather Bureau. Mr. Becker joined the Bureau as a Junior Observer in 1929 at Wichita, Kansas. He also served at North Head, Wash. and Denver, Colo. He was stationed at San Diego since 1948. Mr. Becker's address is 1961 Galveston Street, San Diego, California.

**MARK D. SOLESBEE**, a Microphotographer at the National Weather Records Center in Asheville, N.C., retired December 30 after nearly 18 years of Federal service. Mr. Solesbee began his Government career with the General Accounting Office in Asheville in 1944. He joined the Weather Bureau at the NWRC in 1958 and served there until his retirement. Mr. Solesbee's address is 79 Louisiana Avenue, Asheville, North Carolina.

**CHARLES F. JESPERSEN**, Meteorologist in Charge at the Weather Bureau Airport Station in Burlington, Iowa, retired December 30 after 37 years of Federal service. Mr. Jespersen joined the Bureau in 1927 as a Junior Observer at Chicago, Ill. He also served at Evansville, Ind., and Lansing, Mich. He was named Official in Charge at Burlington in 1947. Mr. Jespersen's address is 1304 N. 6th Street, Burlington, Iowa.

**CLAUDE I. POULSON,**

a Packer in the Procurement and Supply Branch of the Administrative Operations Division, retired on February 28 after 25 years of Federal service. Mr. Poulson joined the Bureau in 1941 and worked in the General Services area and the Printing Section,

in addition to his last six years in the Procurement and Supply Branch. His entire Weather Bureau career has been spent in the Washington, D. C., area. Mr. Poulson's address is 1443 T Street, N.W., A #24, Washington, D.C.



## Deaths

**FRANK J. BAVENDICK,**

a retired Meteorologist who served the Weather Bureau for nearly 50 years, died on August 21, 1964, in Dubuque, Iowa. His work in the Bureau took him to South Carolina; Michigan; Salt Lake City, Utah; Fort Wayne, Indiana; and lastly to Bismarck, North Dakota, where he worked for 37 years. Twenty of these years were spent as the Meteorologist in Charge at the Bismarck station. Mr. Bavendick is survived by his son, Frank Jr. of Bismarck, and two daughters, Mrs. James Lamb of Grand Forks, North Dakota, and Mrs. Kenneth Dartt of Fargo, North Dakota.

**CHARLES K. HUNSAKER,**

a Meteorological Technician at the Weather Bureau Airport Station in Toledo, Ohio, died on March 1, 1965. Mr. Hunsaker received his B.A. degree from the Southern Illinois Normal University in 1938. In

1945 he joined the Bureau as a Meteorological Aid in Bismarck, North Dakota, and from 1946 he worked in Toledo, Ohio. He is survived by his widow, Jean S. Hunsaker, and his son, Charles Reed Hunsaker. They reside at 1607 Addington Road, Toledo, Ohio.

**RALPH C. WEST,**

a retired Meteorologist and the former MIC at the Weather Bureau Office in Scranton, Pennsylvania, from 1930 to his retirement in 1949, died on January 30, 1965, in Lewisburg, Pennsylvania. Mr. West worked for the Bureau 42 years, starting his career as an Observer at Charlotte, North Carolina. He later served in St. Louis, Missouri; Birmingham, Ala.; Richmond, Lynchburg, and Bluemont, Virginia; Helena, Montana; Alpena and Port Huron, Michigan; and lastly in Scranton, Pennsylvania.

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# TOPICS

MAY - JUNE

1965

VOLUME 24

NUMBER 3

UNITED STATES DEPARTMENT OF COMMERCE • WEATHER BUREAU



# TOPICS

MAY - JUNE  
1965

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THE COVER: Volunteers at Mankato, Minn., work to block flood waters. (See story on page 82). Minneapolis Morning Tribune photograph.

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1965

# THE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

## Weather Bureau Would Be Part of New Commerce Agency Proposed by President

On May 13, President Johnson submitted to Congress a reorganization plan consolidating the Weather Bureau and the Coast and Geodetic Survey to create a new Commerce agency called the Environmental Science Services Administration (ESSA). Unless it is disapproved by Congress, the plan becomes effective 60 days after its submission. At that time, the Central Radio Propagation Laboratory (CRPL) of the National Bureau of Standards will be transferred to the new Administration.

The establishment of ESSA has been under intensive study for more than a year. In May 1964, after a period of preliminary discussion, Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology, formally established a special committee to review the environmental science service activities of the Department of Commerce and to make recommendations that would permit the Department to discharge its environmental science service responsibilities more effectively and economically and to raise the level of excellence of its environmental science service programs.

The Chief of the Weather Bureau, Dr. Robert M. White, served as chairman of the committee, and the other members were Dr. Allen V. Astin, Director of the National Bureau of Standards, and Admiral H. Arnold Karo, Director of the Coast and Geodetic Survey. During the course of its review the committee had the benefit of the advice and counsel of a panel of four eminent scientists appointed by Assistant Secretary Hollomon from outside the Federal Government. Panel members were Dr. Lloyd V. Berkner, President, Graduate Research Center of the Southwest; Dr. Thomas F. Malone, Vice President for Research, The Travelers Insurance Companies; Dr. Emmanuel Piore, Vice President, International Business Machines Corporation; and Dr. Roger Revelle, Director of Harvard University's Center for Population Studies.

The special committee's primary recommendation was the creation of a new organization to bring together the environmental science service activities now being carried on by the Weather Bureau, the Coast and Geodetic Survey, and the Central Radio Propagation Laboratory. After this recommendation had been endorsed by the panel of scientists, it was reviewed and approved by Assistant Secretary Hollomon, by the Secretary of Commerce, and ultimately by the President.

In a memorandum to all Weather Bureau employees, distributed on the day of the President's announcement, Dr. White said:

"The creation of ESSA is a response to three significant developments of the past decade. It is a response to the increasing need of the nation for an adequate warning system for all the severe hazards of nature and to its increasing need for fuller information about the physical environment. It is a response to our technological advances in observing the physical environment and in communicating and processing environmental data. We now have new tools with which to probe the environment, to describe it, to seek an understanding of its dynamic processes, and to provide the public with the environmental information that it needs. It is a response to our growing awareness that the sciences dealing with the physical environment are not a collection of separate and distinct fields of scientific interest, but a unified group of disciplines. Man's physical environment is a scientific whole, and we must study it as such.

"ESSA will give us many new capabilities. It will enable us to establish a common communications network for all environmental hazard warnings. It will enable the various segments of our economy that require environmental information to look to a single source to meet much of their need. It will enable us to pool complex and expensive facilities—such as satellites, aircraft, ships, and

computers—and put them to multiple geophysical uses. It will enable us to establish a national repository of environmental information and to provide comprehensive geophysical data services. And it will provide a framework for better scientific research. There will be increased opportunities for collaboration among the various disciplines that make up the environmental sciences and for the mounting of multidisciplinary attacks on significant environmental problems. There will be enhanced freedom to seek to identify and solve important long-range problems.”

“In recommending the establishment of ESSA,” Dr. White said, “the special committee of Bureau heads contemplated that the Weather Bureau, through its far-flung field organization, would continue to provide the nation with its meteorological and hydrological services. The Bureau would continue to maintain the necessary executive and research arms to direct and support its field service. The various functions that make up this field service would continue to function without material change. They would eventually be responsible not only for the local dissemination of weather forecasts and warnings, but also for the dissemination of forecasts and warnings of other environmental phenomena in association with our sister organizations. The administrative services of the Bureau would be uni-

fied with the administrative services of these sister organizations. The meteorological satellite operations of the Bureau would be broadened to include other environmental satellite operations. And some of the Bureau’s meteorological research would be brought into close collaboration with other environmental research.”

Commenting to employees on the President’s proposal, Secretary of Commerce John T. Connor stated that the process of reorganization “. . . will require many stages and will extend over a considerable period of time. You will be kept informed of each significant step that affects your role in ESSA.”

“The new agency,” the Secretary said, “will offer each of you a fresh and important challenge as you move ahead to develop a better framework for the environmental science services of the Department of Commerce, to extend the range of these services and to seek higher levels of excellence . . .

“The new agency—with its extensive services and its extensive facilities—will offer each of you the opportunity to acquire a broader experience than ever before. It will open up for you new avenues for the advancement of your careers.”

The following is the complete text of the President’s message to Congress on the Environmental Science Services Administration:

I transmit herewith Reorganization Plan No. 2 of 1965, prepared in accordance with the provisions of the Reorganization Act of 1949, as amended, and providing for the reorganization of two major agencies of the Department of Commerce: The Weather Bureau and the Coast and Geodetic Survey.

The reorganization plan consolidates the Coast and Geodetic Survey and the Weather Bureau to form a new agency in the Department of Commerce to be known as the Environmental Science Services Administration. It is the intention of the Secretary of Commerce to transfer the Central Radio Propagation Laboratory of the National Bureau of Standards to the Administration when the reorganization plan takes effect. The new Administration will then provide a single national focus for our efforts to describe, understand, and predict the state of the oceans, the state of the lower and upper atmosphere, and the size and shape of the earth.

Establishment of the Administration will mark a significant step forward in the continual search by the Federal Government for better ways to meet the needs of the Nation for environmental science services. The organizational improvements made possible by the reorganization plan will enhance our ability to develop an adequate warning system for the severe hazards of nature—for hurricanes, tornadoes, floods, earthquakes, and seismic sea waves, which have proved so disastrous to the Nation in recent years. These improvements will permit us to provide better environmental information to vital segments of the Nation’s economy—to agriculture, transportation, communications, and industry, which continually require information about the physical environment. They will mean better services to other Federal departments and agencies—to those that are concerned with the national defense, the exploration of outer space, the management of our mineral and water resources, the protection of the public health against environmental pollution, and the preservation of our wilderness and recreation areas.

The new Administration will bring together a number of allied scientific disciplines that are concerned with the physical environment. This integration will better enable us to look at man's physical environment as a scientific whole and to seek to understand the interactions among air, sea, and earth and between the upper and lower atmosphere. It will facilitate the development of programs dealing with the physical environment and will permit better management of these programs. It will enhance our capability to identify and solve important long-range scientific and technological problems associated with the physical environment. The new Administration will, in consequence, promote a fresh sense of scientific dedication, discovery and challenge, which are essential if we are to attract scientists and engineers of creativity and talent to Federal employment in this field.

The reorganization plan provides for an Administrator at the head of the Administration, and for a Deputy Administrator, each of whom will be appointed by the President by and with the advice and consent of the Senate. As authorized by the civil service and other laws and regulations, subordinate officers of the administration will be appointed by the Secretary of Commerce or be assigned by him from among a corps of commissioned officers. The Administration will perform such functions as the Secretary of Commerce may delegate or otherwise assign to it and will be under his direction and control.

Commissioned officers of the Coast and Geodetic Survey will become commissioned officers of the Administration and may serve at the discretion of the Secretary of Commerce throughout the Administration. The reorganization plan authorizes the President at his discretion to fill the office of Deputy Administrator by appointment, by and with the advice and consent of the Senate, from the active list of commissioned officers of the Administration.

The reorganization plan transmitted herewith abolishes—and thus excludes from the consolidation mentioned above—the offices of (1) Chief of the Weather Bureau, provided for in the Act of October 1, 1890 (15 U.S.C. 312), (2) Director of the Coast and Geodetic Survey, provided for in the Acts of June 4, 1920, and February 16, 1929, as amended (33 U.S.C. 852; 852a), and (3) Deputy Director of the Coast and Geodetic Survey, provided for in the Act of January 19, 1942, as amended (33 U.S.C. 852b).

After investigation, I have found and hereby declare that each reorganization included in Reorganization Plan No. 2 of 1965 is necessary to accomplish one or more of the purposes set forth in section 2 (a) of the Reorganization Act of 1949, as amended. I have also found and hereby declare that by reason of the reorganizations made by the reorganization plan, it is necessary to include in the plan provisions for the appointment and compensation of the officers of the Administration set forth in section 4 of the reorganization plan. The rate of compensation fixed for each of these officers is that which I have found to prevail in respect of comparable officers in the executive branch of the Government.

In addition to permitting more effective management within the Department of Commerce, the new organization will ultimately produce economies. These economies will be of two types. The first, and probably the most significant, is the savings and avoidance of costs which will result from the sharing of complex and expensive facilities such as satellites, computers, communication systems, aircraft, and ships. These economies will increase in significance as developments in science and technology bring into being still more advanced equipment. Second, integration of the existing headquarters and field organizations will permit more efficient utilization of existing administrative staffs and thereby produce future economies. It is, however, impracticable to specify or itemize at this time the reductions of expenditures which it is probable will be brought about by the taking effect of the reorganizations included in the reorganization plan.

I recommend that the Congress allow the accompanying reorganization plan to become effective.

LYNDON B. JOHNSON

THE WHITE HOUSE  
May 13, 1965.

## The Coast and Geodetic Survey

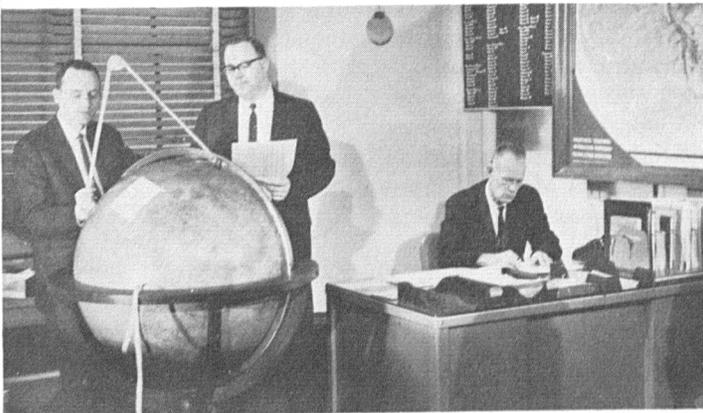
The Coast and Geodetic Survey is the Nation's oldest scientific body. Established in 1807 under President Thomas Jefferson, its commissioned and civil service personnel include distinguished scientists, engineers, and technicians in cartography, geodesy, geomagnetism, gravimetry, oceanography, photogrammetry, and seismology.

The Survey has about 2,800 employees, including a commissioned officers corps of approximately 215, headed by Rear Adm. H. Arnold Karo, its Director since 1955. (The C&GS is one of the seven uniformed services of the Government.)

The agency is organized into two major segments: the field organization and the headquarters organization. Headquarters is located at the Washington Science Center in Rockville, Maryland. There are various operational units also in the Commerce Building and other locations in Washington, D.C.

The Survey's field offices are located in Boston; New York; Norfolk; New Orleans; Kansas City; San Francisco; Los Angeles; Portland, Oregon; Seattle; Honolulu; and Anchorage.

Perhaps the best known, but by no means the only projects, of the Coast and Geodetic Survey are its mapping and seismologic operations. Approximately 30 million nautical and aeronautical charts are distributed by the Survey each year, and it oversees the operation of a worldwide network of seismographs in more than 50 nations.



C & GS scientists locate the center of an earth tremor so that its effects can be assessed.



Geodetic field party conducting a survey in western U.S.

A detection system of a similar nature, the Survey's Pacific Seismic Sea Wave Warning System with its network of some 60 tide stations warns inhabitants of the Pacific basin, including the Hawaiian Islands and the Pacific coast, of the onslaught of destructive seismic sea waves, which are caused generally by undersea earthquakes.

The Coast and Geodetic Survey is the Government's chief oceanographic agency. Its "white fleet" of 14 ships travels millions of miles along the shores of the United States and across the oceans. Its oceanographic operations embrace many fields, including hydrographic surveys, marine gravity and magnetic surveys, oceanographic surveys of the physical and chemical properties, and tidal surveys. The fleet operates generally out of bases at Norfolk, Virginia, and Seattle, Washington.

An important part of the agency's organization is its geodetic field parties. Other mobile elements include photogrammetric parties, gravimetric parties, magnetic survey parties, seismological survey parties, satellite geodesy parties, and Coast Pilot parties.

The Survey's field organization also includes fixed observatories and laboratories for performing specialized functions. Among these are two latitude observatories, a geomagnetic laboratory, a seismological laboratory, and magnetic and seismological laboratories at strategic locations throughout the world. ■

# The Central Radio Propagation Laboratory

The Central Radio Propagation Laboratory in Boulder, Colorado, is the central agency of the Federal Government for obtaining and disseminating information on the propagation of electromagnetic waves, on the electromagnetic properties of man's environment, on the nature of electromagnetic noise and interference, and on methods for more efficient use of the electromagnetic spectrum for telecommunications purposes.

Established in 1946, the Laboratory now has 534 employees and four technical divisions.

The Ionospheric Telecommunications Division, as its name implies, is concerned with telecommunications in the complex series of electrified layers in the atmosphere, extending from about 50 to 500 miles above the earth's surface. The ionosphere is capable of reflecting radio waves back to earth. It can also scatter radio waves beyond the horizon. The division has played a key role in the discovery of new modes of electromagnetic propagation by the ionosphere and the practical use of such new telecommunication techniques.

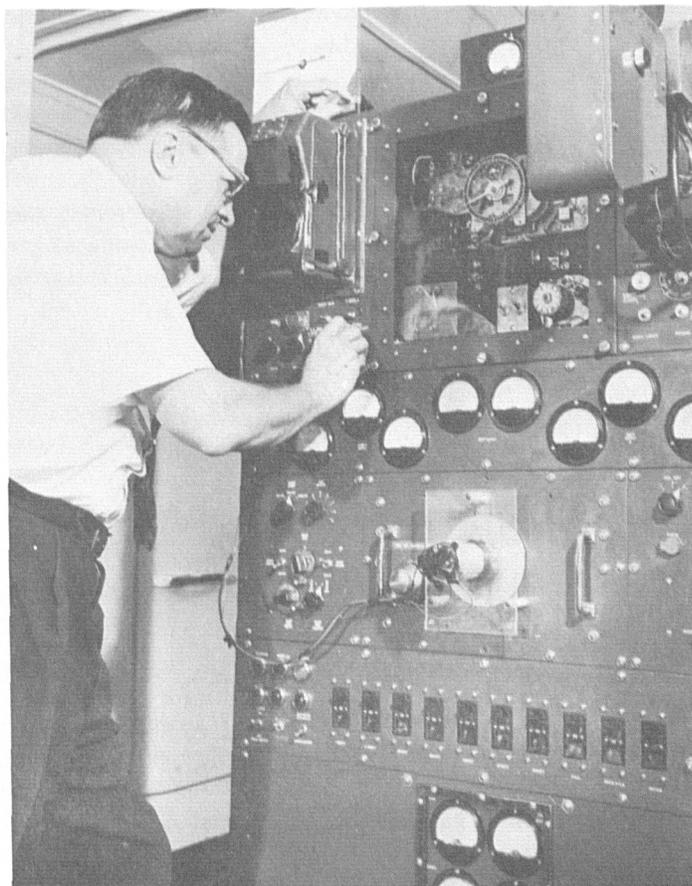
An important service of this division is the publication of a regular "radio weather" forecast series, issued three months in advance, which contains predictions of the best frequencies for ionospheric radio transmissions.

The CRPL's Tropospheric Telecommunications Division is concerned with telecommunication activities and research within the area from the earth's surface up to five or ten miles. This division's research makes it possible to evaluate the effects which terrain and weather have on the transmission of frequencies such as are used in television and in microwave relays. New research efforts in this field include investigations of the propagation of infrared and optical frequencies as well as of radio frequencies. In addition, studies are made of natural and man-made noise which together form the background against which signals must be detected.

From all this comes information that assists such agencies as the Federal Communications Commission and the Interdepartmental Radio Advisory Committee in making allocations which allow efficient use of the extremely crowded spectrum of electromagnetic frequencies.

The Space Environment Forecasting Division conducts research on the effects of solar disturbances and how to predict them. Through years of ionospheric research in support of telecommunications, CRPL has devised a number of observational techniques to measure changes in the ionosphere which affect radio communications. Since most of these changes result directly or indirectly from solar-associated disturbances, many of these same techniques are also used to study the nature of solar disturbances themselves, through study of their effects upon the ionosphere. Such activities as manned space flights and the monitoring of nuclear explosions require the CRPL's services and research in this area.

An engineer adjusts the ionosonde, which provides input for CRPL's daily radio disturbance predictions, at CRPL Forecast Center, Fort Belvoir, Va.

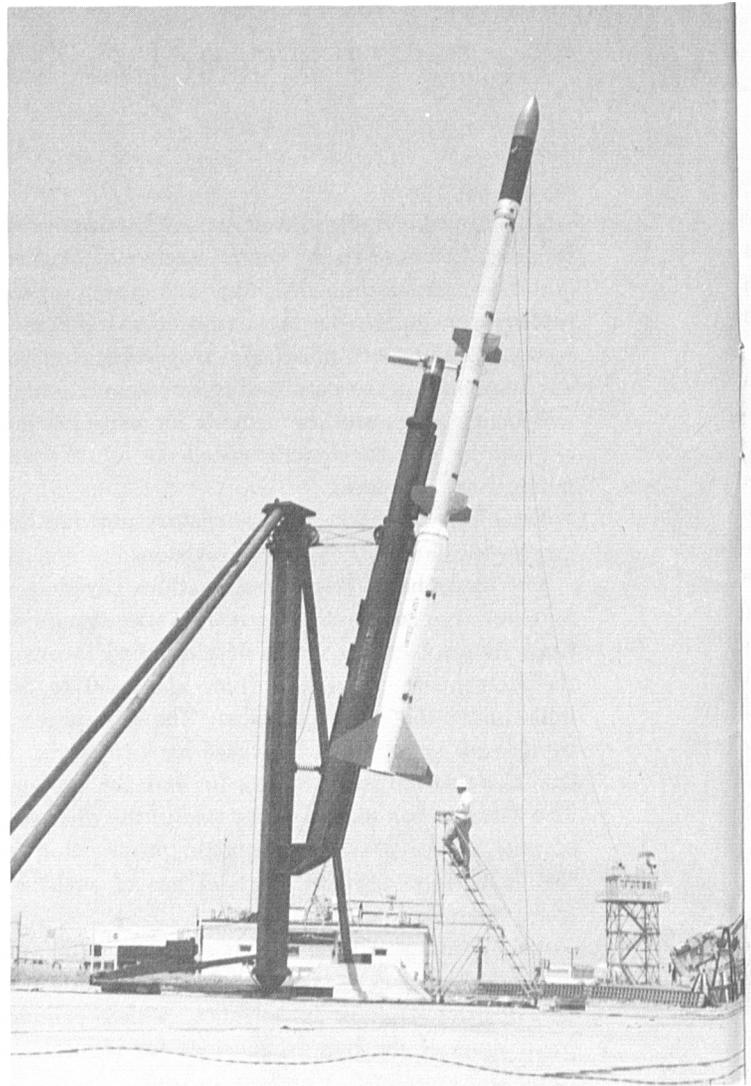




CRPL's 22-acre dipole antenna at Jicamarca, Peru, takes ground-based observations of the ionosphere, exosphere, interplanetary medium, and the sun.

The Central Radio Propagation Laboratory's Aeronomy Division conducts research aimed toward increasing our understanding of the physical processes controlling the ionosphere, and leading to an increased ability to predict and control its usefulness for telecommunications and other space-age needs. This division is attempting to gain detailed knowledge of the characteristics of the upper atmosphere to great heights.

To meet the challenge of increased national involvement in space research and satellite applications, several new methods of measurement have been developed. These include the Jicamarca (Peru) scatter radar, which uses an extremely high-powered transmitter and sensitive antenna of great size, and satellite-borne equipment such as the topside sounder and beacon satellites. ■



Four-stage Javelin rocket used to carry instrumentation above the ionosphere for CRPL.

## U.S. WEATHER BUREAU SUPPORT FOR MANNED SPACEFLIGHTS

*by Kenneth M. Nagler  
Head, Spaceflight Meteorology Group*

The Spaceflight Meteorology Group, with headquarters at the National Weather Satellite Center and offices at Cape Kennedy, Houston, and Miami, provides basic weather information for all NASA manned spaceflights. In the next several years,

the Group's services will be used with increasing frequency, since the remaining eight Gemini flights are scheduled for completion during 1965 to 1967. Three of the Gemini missions are of long duration, from four days to two weeks. The others involve

the launch of an unmanned spacecraft followed by the launch of a manned Gemini craft for tests of rendezvous and docking.

Starting in early 1967, the first manned Saturn-Apollo flight (with crew of three) is scheduled for an orbital mission. After a number of additional Apollo flights, the manned lunar landing is planned for 1969. Beyond that, man most certainly will attempt even more imaginative voyages in space, probably including the launching of space laboratories. All of these missions will be dependent in some measure on weather before they leave, as they leave and return to the earth's atmosphere, and after landing until recovery.

The Spaceflight Meteorology Group, originally called the Project Mercury Weather Support Group, was formed five years ago when the National Aeronautics and Space Administration asked the Weather Bureau to provide specialized meteorological services for the Nation's manned spaceflight program. After forecasting conditions for the suborbital flights of Alan Shepherd and Gus Grissom, the Group turned its attention to the first Project Mercury three-orbit manned flight. For acceptable conditions, light winds and fairly clear skies were re-

quired in the launch area, and only moderately strong winds and seas could be tolerated in the planned (or possible emergency) landing areas. In studying the probabilities of acceptable weather for such a flight, the Group determined that February was the poorest month, noting how difficult it would be to find and forecast good weather in that month. The meteorologists were not seriously concerned, however, because it seemed likely that this flight would be launched in a more favorable season. But the John Glenn orbital flight was delayed and not ready for launch until late January 1962. The flight was important and everything else was ready, so there was no thought of postponing for two or three months until the weather odds improved. The problem then was to find a suitable day during the worst season. Four delays were directly attributed to weather conditions—January 27, when a thin but opaque layer of clouds at about 8,000 feet hung over Cape Kennedy; and February 14, 15, and 16, when rough seas and strong winds were occurring in the Atlantic Ocean area where the spacecraft might have landed in an early termination. Suitable weather conditions finally prevailed for the successful flight on February 20.



On the day before their Gemini flight, Astronauts Virgil (Gus) Grissom (right) and John Young receive a weather briefing from the Weather Bureau's Ken Nagler (left) and Ernest Amman.

The three following Mercury flights—by Scott Carpenter, Walter Schirra, and Gordon Cooper—were not troubled by weather delays. For each of these flights, there were potential meteorological problems which kept the Group busy, but since the critical areas were predicted to have acceptable conditions, the flights went off without weather delays. The recent Grissom-Young flight in the Gemini series took off as scheduled on March 23, although March is usually a difficult month weatherwise, since good weather covered the launch and recovery areas on that day.

The most dramatic work of the Spaceflight Meteorology Group involves forecasting for the spaceflights. The actual briefing of the Mission Director, his staff, and the flight crew in the past has been done at Cape Kennedy, both before and after the launch. Beginning with the second manned Gemini flight (held June 3 to 7), the launch decision was made at Cape Kennedy as before, but after launch the mission was controlled from the Manned Spacecraft Center in Houston. Thus, immediately following future launches, several meteorologists at Cape Kennedy will fly to Houston to take part in round-the-clock operations there.

The forecasts presented to the NASA staff are the results of the effort of many people. Primary forecast responsibility for the launch and Atlantic Ocean areas is given to J. R. Gulick's Miami Section of the Spaceflight Meteorology Group, which is located with other Weather Bureau offices at the University of Miami. To forecast conditions for most of the required areas, the Spaceflight Group at NWSC, under Richard A. Brintzenhofe during operational periods, uses National Meteorological Center guidance material, weather satellite observations, and information from a variety of sources, including material from Weather Bureau offices in Honolulu and San Juan and special advisories from the Australian Bureau of Meteorology. Also, extensive use is made of observations from U.S. Navy recovery forces and from special flights of Air Force and Navy reconnaissance aircraft. All of this information is used for the preparation of forecasts and maps which are presented to the Mission Director and his staff.

The Cape Kennedy section of the Spaceflight Meteorology Group, headed by Ernest A. Amman, is located in the large NASA installation on nearby Merritt Island, but the Group has temporary quarters in the Control Center during the mission period.

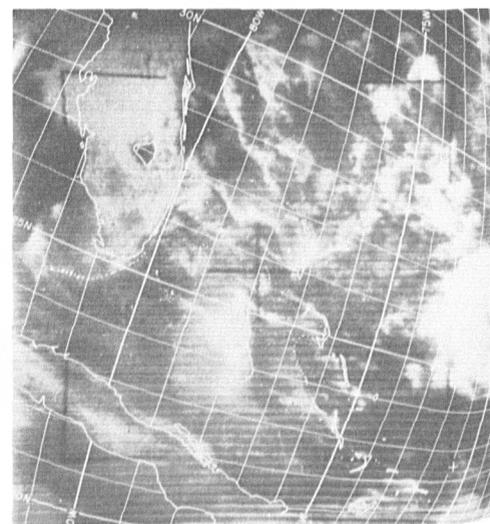
Under the direction of Alan N. Sanderson, the weather group at the Manned Spacecraft Center in Houston has spacious quarters well equipped to support the spaceflights of the future.

The Spaceflight Meteorology Group does much more than simply gather data to forecast weather conditions for manned flights. As background material in order to provide forecasts for a large portion of the world (generally from about 35°N. to 35°S. latitude), the Group prepares climatological studies and uses those which are already available. It also makes forecast development studies to improve the capacity to anticipate good or bad weather affecting critical areas.

In addition, the Group has other functions. As part of its staff support to the Manned Spacecraft Center, the Kennedy Space Center, and the NASA Office of Manned Space Flight (Washington), the Group answers questions and makes special studies on a variety of meteorological subjects related to spacecraft design or operational planning. Also, it provides a forecasting and briefing service for tests of spacecraft and components—for example, for drops of spacecraft models from aircraft or for flotation tests of the spacecraft in the Gulf of Mexico.

Administratively a part of the National Weather Satellite Center, the Spaceflight Meteorology Group works closely with many other parts of the Weather Bureau. The weather support provided for manned spaceflight programs is considered not just a task of one group, but a Weather Bureau mission. ■

This TIROS IX photograph of the launch and landing areas of the Grissom-Young flight was taken at 12:41 p.m., EST, March 23. The Gemini spacecraft was launched at Cape Kennedy at 9:24 a.m. and landed in the Atlantic at 2:17 p.m. Although most of Florida was cloudy throughout the day, Cape Kennedy had few clouds at launch time.



# Tornado Warnings Reviewed By Special Bureau Team

On Palm Sunday—April 11—tornadoes struck a six-state area of the Midwest. A review of the tornado forecasts, conducted the next day, showed that the SELS staff had done a remarkable job of prediction. Of the 37 tornadoes that occurred on Palm Sunday, 33 were in valid forecast areas. Nevertheless, 271 people lost their lives.

To learn the reasons why, Dr. White appointed a special tornado warning survey team. Paul Kutschenreuter, Deputy Director for Service Programs, ONMS, was chairman of the team. Other members were Roy Fox, Kansas City Regional Director; Edwin Kessler, Director of the National Severe Storms Laboratory; Allen Pearson, Head, Emergency Warnings Branch; and Herbert Lieb, Acting Director of Public Information.

The team began its survey at the Regional Office in Kansas City, where it was joined by Charles Woffinden, Manager, Operations Division; Norman Prosser, Regional Radar Meteorologist; and Howard Martin, Aviation Service Operations Meteorologist.

Traveling in two light aircraft and also by car, members of the group visited Weather Bureau stations at Indianapolis, Chicago, Madison, Milwaukee, Muskegon, Grand Rapids, South Bend, Fort Wayne, and Cleveland. In the most severely affected areas, team members interviewed tornado survivors, as well as State and local officials.

On the basis of these interviews, the team concluded that the death toll would have been much higher without the excellent cooperation of radio and television stations in broadcasting forecasts and warnings throughout the affected areas.

Large numbers of people in the areas for which tornado forecasts were issued on April 11 were aware of the forecasts. But, because it was a balmy Sunday afternoon, many were away from the radio or television and did not hear the subsequent warnings.

“Very few of the people interviewed,” the group found, “were aware of the difference between a tornado forecast and a tornado warning. Accordingly, there was no real feeling of urgency even among most of those who actually heard the warnings on radio and TV. The ‘warning’ was generally interpreted as just an updated statement of the tornado forecast.”

In its report, presented to Dr. White on May 2, the team identified several factors which may have contributed to the high death toll and recommended the following corrective actions:

1. Hold preparedness meetings in collaboration with the appropriate Federal, State, county, and local government officials and news disseminators in order to develop emergency plans for alerting all segments of communities whenever emergency warnings are issued. Urge news outlets to install positive alerting devices (remoted to the announcer's position where necessary) on weather teletypewriter machines installed on their premises.

A three-car garage in Toledo was heavily damaged by a tornado, while a house nearby was practically untouched. (Toledo Blade photo)



2. Saturate the public before and during the season with explanatory material on tornadoes, tornado forecasts, tornado warnings, and the appropriate action to be taken in each instance with the assistance of press, radio and TV, schools, and community groups.
3. Strengthen severe storm warning reporting networks in local communities and insure that they remain alert and active.
4. Complete the state-wide weather teletypewriter dissemination networks connecting Weather Bureau offices directly with news outlets and provide for interstate connections as necessary.

Noting the important part radar played in the warnings, the team urged that existing plans to fill major gaps in the radar network be carried out as soon as possible. It recommended replacement of the older WSR-1 to WSR-4 radars and the SP-1 models with the proven WSR-57 type and also urged provision of radar repeater scopes to those stations in tornado-prone areas that now rely on radar from other localities.



The remnants of a brick ranch house give testimony of a passing tornado at Toledo. (Toledo Blade photo)

Backup emergency radio communications between adjacent Weather Bureau offices, and between Weather Bureau and appropriate State, county, and local offices having community emergency responsibilities, were recommended along with adequate emergency power at all Weather Bureau offices. Extension of RAWARC circuit to all Weather Bureau offices in tornado-prone areas and more surveys by behavioral science groups were among the other recommendations.

The group also said that continued support for both basic and applied research and development carried out at the National Severe Storms Laboratory is "essential to further improvement and refinement of our severe storms forecasting and warning responsibilities."

Dr. White told the team that its findings and recommendations will be given immediate consideration and that appropriate actions would be taken as soon as possible. ■

Members of the survey team included (left to right) Messrs. Lieb, Kutschenreuter, Pearson, Prosser, Woffinden, Martin, and Kessler.



# Four Nations Join In Radiometer Comparison Test

Meteorologists from the United States, Germany, Japan, and the Soviet Union assembled at the University of Wisconsin in Madison on March 22 to begin two weeks of comparisons of data and instruments relating to thermal radiation studies of the free atmosphere.

Under the sponsorship of the International Association of Meteorology and Atmospheric Physics through its Radiation Commission and the World Meteorological Organization, the scientists conducted a series of standardization tests with balloon-borne radiometers used for basic studies of long-wave radiation flux in the atmosphere on a worldwide basis. With such standardization, radiometer data from foreign networks can be used by each country's participating scientists in their own research on radiation balance and the overall heat budget of the earth.

The intercomparison tests, consisting of 13 joint ascents, were made beginning March 24, at the Weather Bureau Airport Station in Green Bay, Wisconsin. Meteorologists from each country flew their own instruments by balloon and documented their performance.

Following this four-day series of tests, the scientists traveled to Miami, Florida, to visit the Hurricane Research Center, where further standardization flights in a semi-tropical atmosphere were conducted. While in Miami, from March 28 through April 3, the group also visited the National Hurricane Research Laboratory. On April 5 and 6, the group visited Weather Bureau facilities in the Washington, D. C., area.

In general charge of the tests and representing the United States was Dr. Peter Kuhn of the Weather Bureau Office at the University of Wisconsin. He was assisted by Mr. Stephen Cox and Mr. James Maynard of the University's Department of Meteorology.

Foreign scientists taking part in the intercomparison were Drs. V. I. Schlyakhov and G. N. Kostyanov of the U.S.S.R. Hydrometeorological Service, Dr. H. G. Muller and Mr. H. Fimpel of the Univer-



Dr. Peter Kuhn of the Weather Bureau Office at the University of Wisconsin (center) examines a radiometer which was used in the intercomparison tests. Standing with him are Professor Wahl of the University of Wisconsin (right) and Edward Jurasinski, Director of Special Products for the Johnson Service Company in Milwaukee.

sity of Munich, and Dr. N. Arizumi and Mr. H. Sekiguchi of Japan's Meteorological Agency. Accompanying the group were Mr. J. R. Latimer of the Canadian Meteorological Service and Prof. E. W. Wahl of the University of Wisconsin, Department of Meteorology.

The standardization of radiometer data will aid atmospheric research studies of the earth's constant "give and take" of long-wave radiation. These studies are believed to be basic to the development of atmospheric circulation patterns and climatic trends, to long-range weather forecasting, and to interpretation of satellite data used in weather research. Since no country can now secure sufficient data on a global scale, international cooperative research is being advocated by scientists.

Thermal radiation effects account for an estimated 25 percent or more of the energy driving the atmosphere and even small differentials of radiant energy levels could be significant for weather changes. Research indicates that small differences can operate as triggering mechanisms which can set off other changes in a chain-like reaction. Radiative phenomena occurring in one part of the world can be a factor in later weather conditions in another.



Winona, Minn.—April 13. Work crews busily construct an 8-mile long earthen dike. The river rose six feet more before it crested.



Stillwater, Minn.—April 14. A dike blocks the entrance to this bridge leading to Wisconsin. The river was already three feet above flood stage.



St. Paul, Minn.—April 14. Dikes protect the Northern States Power Plant and other industries along this Mississippi river front highway.

## Connor Praises Flood Warnings

An early advisory, warning of the flood potential in the upper Mississippi Basin, was issued by Weather Bureau river forecasters on March 18. By the end of April, a 700-mile stretch of the upper Mississippi had seen the greatest flood known for more than 100 years. Hundreds were injured and thousands were left homeless as the flood rose to cover more than 100,000 acres of land.

Accurate forecasting by the Weather Bureau gave many residents and industrial concerns time in which to throw up barricades against the rising waters. The scenes on this page, from the *Minneapolis Morning Tribune* and the *Minneapolis Star* newspapers, offer graphic evidence of how this precious time was used to protect life and property.

On April 22, Secretary of Commerce John T. Connor issued the following message to Weather Bureau employees:

“Weather Bureau forecasts and warnings for the record-breaking floods in the upper Mississippi and its tributaries, and in the tributaries of the Missouri River, were extremely accurate and effective. Because they gave the general public and the vast industries of the upper Midwest time to prepare for the impending flood, there was great saving of life and property.

“I want to commend all the Weather Bureau employees who contributed to the preparation of these flood forecasts and warnings, and thus played an important and vital role in the coordinated efforts of local, State, and Federal agencies to hold losses to a minimum.

“It is most gratifying to me—as it must be to you—that the Weather Bureau team performed so well.” ■

# BROADCASTING THE WEATHER

*(Text of an address by Dr. White to the Radio Session at the 43rd annual convention of the National Association of Broadcasters, March 23, 1965.)*

As many of you may know, I have been Chief of the United States Weather Bureau in the Department of Commerce for only a relatively short period of time—since October 1963. But I have been involved in meteorology for about 25 years now, and I have always been very much aware of the significant role that the broadcasting industry has assumed in providing the American public with weather information. And I have been aware of the excellent record of your industry in carrying out this role.

Let me go a step further and say that the role you play in the dissemination of weather information is today more significant than that of any other medium of mass communication. We in the Weather Bureau today look upon the broadcasting industry as an indispensable part of the nation's weather services. It is our job to see to it that you get all the information about the weather that the members of the general public need. But we look to you to get this information to them.

It is easy to see why broadcasting—particularly radio—has assumed so significant a role. For one thing, it is such a simple matter for anyone to tune in, and tune in we all do. And the radio, thanks to battery power, is almost everywhere. It is not only in the home and in the office and factory, but it is in the car and it is with us outdoors. For another, a broadcasting station has the jump on any rival medium. It can be absolutely current at the moment of broadcasting. Your morning newspaper, on the other hand, may carry a forecast that is several hours old. And the public is conscious of this difference.

Now most of us tune in for a weather report because we want to know whether to wear a heavy or light coat that day, or whether to carry an umbrella, or whether the weekend will be good for a game of golf or some other outdoor activity. But weather is also very serious business. Think simply of what happened in the United States last year. In 1964 hurricanes ripped through Florida, Georgia, and Louisiana. Floods ravaged California, Oregon, and Washington. Drought blistered large portions of the East and Midwest. There were 400 tornadoes in various parts of the country. They all

caused damages well in excess of a billion dollars, and lives were lost. These are only the more dramatic events. There were others. Sudden frosts killed crops. Snowstorms brought transportation—and economic activity generally—to a momentary halt. They all added to the bill charged to the national economy.

We do not know enough about the physical environment to prevent hurricanes, tornadoes, floods, sudden frosts, and heavy snows. But we can minimize the loss of life and property they cause—by keeping a careful watch on the atmosphere and on the flow of our rivers, by predicting their future state with accuracy, and by giving adequate warnings of weather and flood hazards to all who need warning. This is the mission of the United States Weather Bureau—the task to which in the last analysis all its efforts are devoted.

I wonder how many of you are fully aware of what it takes to operate a national weather service in an age of advanced science and technology. The Weather Bureau's budget each year is in the neighborhood of \$100 million. We use this money to maintain networks of observing stations all over the United States and in the adjacent oceans to sound the atmosphere and record the weather at the surface of the earth and in the upper air. We also maintain a national radar network for the detection and tracking of severe storms. The day is now gone, for example, when a hurricane can hit the coast of the United States without our knowing that it is coming, as happened in 1938.

In orbit around the earth—circling it every hour or two—we have meteorological satellites, the most revolutionary new tool for observing the atmosphere that has been placed at our disposal by modern science and technology. At this very moment there are three research satellites in orbit providing us with views of the weather that would have been unimaginable several years ago. In about a year we shall inaugurate a new operational meteorological satellite system, which will permit us to observe the entire earth's atmosphere on a routine basis each day. The new system will finally put our space technology to practical daily use for the benefit of the science of meteorology and the people we serve.

The Weather Bureau operates high-speed communications channels with connections over the entire globe so that weather information gathered throughout the world may be transmitted to our National Meteorological Center just outside Washington for analysis and the preparation of forecasts. The analysis of weather data and the preparation of forecasts have also entered a new era. No longer are enormous volumes of data laboriously plotted and charted by hand. No longer are our basic weather predictions solely the product of the human mind. Our weather services today are centered around high-speed electronic computer complexes of great magnitude, and these computers analyze huge masses of data and prepare weather forecasts for every part of the nation. We are already automated to such an extent that some forecasts are prepared without human interference from the receipt of data at the National Meteorological Center to the drawing of the final weather charts.

Now all these efforts are wasted if we cannot disseminate our forecasts fully. In many instances, we rely upon a direct link for dissemination. The airplane pilot, for example, calls the airport weather station for his information. But we cannot reach the entire public this way. We must rely on the mass media—and particularly on the broadcasting industry. As I remarked at the beginning of this talk, the broadcaster has become indispensable in the operation of a national weather service.

I think you are all aware of this. I say this because of the wholehearted cooperation the Weather Bureau has always received from your industry. And I say it because of our experience when a weather disaster strikes. Local broadcasters in an area threatened by hurricane or flood recognize that their first duty is to serve in protecting the public safety. They pool resources to provide the most complete coverage possible. They provide constant bulletins. And by so doing, they help keep the loss of life and property to a minimum.

We can see just how important the broadcasting industry is to the nation's weather warning service if we look at what happened as Hurricane Hilda moved from the Gulf of Mexico toward Louisiana last fall. The response to the Weather Bureau's first announcement was immediate. Local television stations in major cities pooled their resources to pick up and bring to the public the latest information on Hilda's strength, location, speed, and direction. Radio stations broadcast frequent bulletins. And because most stations have emergency power

facilities, the listener could expect to hear bulletins throughout the storm.

The television and radio bulletins had an immediate effect. Telephone company officials moved 170 long-distance operators from 10 inland cities to 8 coastal cities to cope with the anticipated demands for service. They ordered 900 repairmen in 5 States to stand by for emergency work. Community officials immediately began to plan the evacuation of those in the path of the storm. Civil Defense officials also began to plan for the public safety. The American Red Cross began to arrange for food kitchens and for clothing and blankets to be sent into the hurricane target area, and it began to fly in personnel to help the anticipated victims of the storm. Ocean vessels moved out of Hilda's path. Oil companies battened down offshore installations and evacuated workers from them. Workers on construction sites also battened down, and the work was shut down. Business meetings in the hurricane target area were cancelled, and area visitors began hasty departures. The Tulane-Duke football game in the Sugar Bowl was postponed. And each individual began to look to the protection of his property and to the safety of himself and his family. Hilda had disastrous effects. But her effects would have been much more severe if television and radio had not been there to broadcast immediate and constant bulletins.

A hurricane or a flood is a dramatic instance of the vital role played by the broadcasting industry in disseminating weather information. A less dramatic instance—but in its own way equally important—is the weather information you provide our agriculture, the farmer and the rancher. Now many of you here today are concerned solely with the city listener. But those of you who serve rural areas are aware of how dependent the farmer and the rancher are on their weather forecasts each day. The biggest hazard, and at the same time the greatest ally, of the nation's producers of food and fiber is obviously the weather. And your weather broadcasts help them to decide when to plant, when to dust crops from the air, when to fertilize, when to spray, when to protect against frost, when to harvest, and when to perform any number of other operations.

The city broadcaster may not be concerned with agricultural weather services. But I wonder if he realizes some of the effects of his routine weather bulletins. Take a hot day in a large city. The morning announcer tells his listeners that the ther-

ometer will rise into the 90's by early afternoon. Immediately, building superintendents turn up the cooling systems of the city's office buildings. Home air conditioners are turned on early. And the drain on the city's power system is tremendous. As a matter of fact, in many parts of the country peak power requirements now occur in the summer.

I said at the beginning of this talk that the record of the broadcasting industry in disseminating weather information is excellent. But I think that it can still be better. I think that we are failing in our duty to the American public if we fail to make the disseminating of weather information, particularly of the hazards of the weather, as good as our art and science permit.

Now, how do we judge whether we are giving the American public the best possible service? There are four touchstones. First, the weather prediction or warning must be as accurate a one as the science of meteorology can devise. Second, it must be a current prediction or warning. Where hazards are concerned, currency is of the essence. Third, it must be intelligible to the general public. Fourth and to some extent this is not a separate element, but simply the result of providing accurate, timely, and intelligible forecasts—the listening public must have confidence in the prediction or warning. For without confidence, the public will not heed it and will not do whatever the prediction or warning requires.

Let us look at each of these points a little more. The accuracy of weather forecasts—and of hazard warnings—is, of course, the concern of the professional meteorologist. Now the science of meteorology is not perfect, and I am the first to admit that the Weather Bureau makes some incorrect predictions. I do not see how it can be otherwise. The dynamic processes of the atmosphere are complex, and we do not have a complete understanding of how they work. And without this understanding our predictions will sometimes be wrong. But they are constantly improving. I believe that there will be a significant improvement in the decade ahead as we develop new ways of observing the atmosphere, better communications, better tools for the processing and analysis of weather data, and new prediction techniques.

If accuracy is the responsibility of the science of meteorology, currency is the responsibility of the broadcaster. Perhaps nothing dates more rapidly than a weather forecast, and the Weather Bureau is constantly revising its forecasts and hazard warn-

ings and issuing new bulletins. Certainly nothing is more useless than a weather bulletin that has been superseded by a new bulletin. And yet, what happens sometimes? The announcer is harried, and he picks up the nearest bulletin and reads it over the air. Unfortunately, it is a superseded bulletin. The current bulletin is on the next table or in the next room. The public is the loser.

Now I sympathize with the announcer. I lead a very harried life myself sometimes. But this sort of thing simply throws away broadcasting's greatest advantage—that it can present immediately the latest information. As I said, the public is very conscious of this fact, and I am sure that every listener believes that he is hearing the latest bulletin every time he hears a weather forecast read over the air. If the announcer reads a stale bulletin, he is giving his listeners very shoddy goods indeed.

Because the currency of a bulletin is so important, perhaps the broadcaster should add a refinement to his presentation. He should indicate when a forecast was issued. More importantly, he should indicate the period covered by the forecast. You all know that the forecast for the morning might be significantly different from that for the afternoon.

Currency is important for all weather bulletins. But it becomes crucial for bulletins that contain hazard warnings. Hurricanes, tornadoes, high winds, heavy snows, floods, and extremes of heat and cold can cause loss of life and the destruction of property, can paralyze a city, or can disrupt the flow of our economic life. Warnings should be broadcast at once. And as one bulletin supersedes another, care should be taken to ensure that only the latest information is broadcast. The public cannot act to protect itself unless the broadcaster plays his part. I shall only remind you that in many instances—most notably, in the case of a tornado—the time which the public has in which to take action to protect itself is, under the best circumstances, dangerously short.

Intelligibility and understandability are both our responsibilities. I cannot claim that the meteorologists of the Weather Bureau are masters of English prose and elocution. Their bulletins are factual, sometimes dry, often technical. And when professional meteorologists read their bulletins over the air, they frequently do so in a dull monotone.

The broadcaster sometimes errs in the opposite direction. He is anxious that what is read over the air captures the ear, and he tries to inject some life into the bulletin. The difficulty is that he may do so at the expense of the weather information he is passing on. He may treat it too flippily and casually, or he may overdramatize it. Now, obviously we should try for an interesting format, use language that the layman can understand, and speak clearly and with some variation in tone. But we should never forget that all we want to do is to transmit to the public a message about the weather that the public will listen to and understand.

Once again I want to lay special emphasis on weather hazards. A weather bulletin may be accurate, and it may be the latest bulletin. But its message may be lost on the public because it is not presented in the right way. There is one particular aspect of presentation that I am concerned about. Sometimes a bulletin is summarized or a portion is deleted in order to save broadcast time. Now warning bulletins are drafted with particular care. The syntax may not always be the best, and the pyramidal construction that journalists use may not always be employed. We are aware of our shortcomings, and we are always working to improve our bulletins. But I do want to emphasize that every word that appears in them means something and has a purpose. When a warning bulletin is summarized, the specific message it was designed to convey may be lost. A summary may easily dilute the strength of a warning, for example. Or, when a bulletin is shortened, a crucial part of its message may be omitted.

How should we handle warning bulletins in the future? As I say, the Weather Bureau drafts these bulletins with very great care, and I think the best way to present them is to identify them as warning bulletins and to read them verbatim. The broadcaster should not edit them at all. I say this even if the broadcaster has a meteorologist on his staff who ordinarily prepares the station's forecasts. Only the Weather Bureau has the facilities to detect and track the path of a severe storm like a hurricane. Where the public safety is concerned, the private meteorologist on a broadcast station staff should use Weather Bureau warnings and identify them as such.

My final standard is: Does the public have confidence in the weather information it receives over the air? If your listeners do not have confidence

in your weather information, if they doubt its reliability, they will not act on the information, and our warning system has failed in its purpose. I said some moments ago that to some extent confidence reflects the accuracy, timeliness, and understandability of our forecasts. But I think that greater honesty would also help build public confidence.

What I mean is this. There are times when a meteorologist knows with fair assurance what will happen over the next 24 hours. There are other times when he is not sure what will happen between morning and afternoon. In either case, we should tell the public so. We should tell the public when we feel certain of our prediction and when uncertain. There have already been experiments along these lines. Perhaps most notable is probability forecasting, in which the weather bulletin states the odds that a particular weather prediction will in fact occur. Probability forecasting was pioneered by the Travelers Research Center and WTIC, both of Hartford, Connecticut, and has been successful there. The Weather Bureau has also tried probability forecasting out of San Francisco, where it has enjoyed wide acceptance, and there has been some use of it in the New York City area. The Bureau is still experimenting with this technique, but it does seem to be a significant way to make weather forecasts more credible and thereby to increase public reliance upon them.

Before I close, I want to return for a moment to my opening. I said that the Weather Bureau recognizes your vital role as part of our nation's total system of providing weather services. At the same time, I want to say again that we in the Bureau recognize that it is our responsibility to provide you with the best possible weather information and to do so in the best and most accessible form.

With this responsibility in mind, the Weather Bureau has established a new program throughout its far-flung field service to improve our services to those who use them. Bureau representatives in each State will be working closely with you to evaluate the effectiveness of our services and to identify and satisfy your needs.

We are working towards the establishment of a nationwide weather dissemination teletypewriter network. It will permit any user to receive weather hazard warnings and regular weather bulletins in hard copy simply by leasing a teletypewriter machine from a local commercial common carrier. There are now about 100 metropolitan areas in the

United States in which this service is available. Area-wide teletypewriter loops have also been extended into smaller communities in portions of 18 States.

In a great many communities it is standard practice for stations to present radio broadcasts directly from the local Weather Bureau office. We are pleased to cooperate with you in this way, and we stand ready to continue this service.

Some broadcasters have their own staff meteorologists. Now, I am aware that most radio stations cannot afford a staff meteorologist. But I urge those who can afford to hire one to do so. A private meteorologist can add explanatory and interpretive material where it seems necessary or desirable. He can help you to focus attention on the needs of your area for special weather information. In recent years, for example, we have seen a tremendous expansion in recreational activities. Some of them—like skiing, boating, and camping—require particular weather conditions. You should begin to think of presenting the detailed weather information that people like the skier, the boater, and the camper need—if you do not already present it.

## CONFERENCE OF REGIONAL METEOROLOGISTS

The first conference of Weather Bureau Regional Meteorologists was held in Washington, D. C., March 22 to 26. Discussions between the Regional Meteorologists and Central Office staff members covered major areas affecting techniques of preparing weather forecasts and warnings.

Attending the conference from field offices were Silvio Simplicio (Region I); Woodrow Dickey and Jeter Pruett (Region II); Lawrence Hughes (Region III); and Jack Thompson and Leonard Snellman (Region IV). Dr. William Klein of the Systems Development Office acted as Chairman.

A special feature of the conference was a discussion of the principal forecasting problems at Regions I, II, III, and IV. The difficulties mentioned included predicting the beginning and ending (as well as quantity) of precipitation, incorporating local effects into NMC guidance material, and find-

How do you find a private meteorologist? One way is to turn to the American Meteorological Society, which maintains a roster of professional meteorologists who might be available. The Society is very interested in how the broadcaster disseminates weather information to the public, and it is desirous of helping the broadcaster to meet high standards of professionalism in his weather presentations. The Society issues a seal of approval to professional meteorologists who broadcast regularly and who can meet the standards of a special review board. I urge every station which thinks its professional meteorologist can qualify to seek this seal. The American Meteorological Society is a professional scientific society of considerable reputation, and its seal of approval can only add to public confidence in your weather broadcasts.

Whether you have a regular station announcer reading Weather Bureau bulletins, whether you present weather broadcasts from your local Weather Bureau office, or whether you have your own station meteorologist, let me say again that the United States Weather Bureau wants and is ready to assist each of you within the limits of its manpower and resources. For both the Bureau and the broadcaster are working towards the same goal—how we may best serve the American public and meet its many needs for weather information. ■



Dr. White poses with Bureau scientists attending the Regional Meteorologists' Conference. They are (front row from the left) Lawrence Hughes, Jeter Pruett, and Woodrow Dickey; (back row) Silvio Simplicio, William Klein, Dr. White, Jack Thompson, and Leonard Snellman.

ing sufficient time for making forecasts. Other problem areas in common were discussed, among them forecasting of showers and thunderstorms, fog and stratus, clear air turbulence, and cold outbreaks.

Considerable attention was devoted to the new Weather Bureau emphasis on local analysis and prognosis with the aid of mesoscale data. The regions are to have the responsibility for forecasts less than 20 hours in advance, but NMC products will be the principal guides for longer time periods. A cash award will be given within each region for the best study in small-scale analysis and forecasting, and an incentive award will be made for the region with the best overall program.

Another highlight of the conference was a panel discussion on probability forecasting. It was generally agreed that precipitation forecasts for both the short and extended range should be expressed as point probabilities. A trial period is planned in which probability forecasts will be evaluated at station and regional levels, to be followed by full implementation of the program for the public.

The conference also discussed the need for better verification statistics. A manual on this topic is being prepared by Technical Procedures Branch, WXAP.

Dr. Robert White, Chief of Bureau, delivered welcoming remarks to the conference. ONMS Director George Cressman noted several important functions of the Regional Meteorologist: (1) to develop efficient and proper use of NMC materials, (2) to develop meteorological programs on-station for local forecasting, and (3) to act as a "meteorological arm" of the Regional Director by providing technical and scientific advice. Paul Kutschenreuter, Deputy Director of Service Programs, emphasized that Regional Meteorologists should develop user-oriented programs, particularly in specialized areas (agriculture, marine, etc.).

Key Bureau personnel described the organization, functions, and current and projected programs of various offices which are concerned with analysis and forecasting procedures. Among those addressing the conference were Dr. Jerome Spar (Director, OMR), Dr. Robert Simpson (Deputy Director for Operations), Merritt Techter (Director, Systems Development), Dr. Frederick Shuman (Director, NMC), Dr. Joseph Smagorinsky (Deputy Director, OMR), Edward Vernon (Manager, WXAP Division), Frank Burnett (Deputy Director, NMC), Harlan Saylor (Manager, A & FD, NMC), Edwin Fawcett (Head, Forecast Branch, A & FD), Vincent

Oliver (Head, Applications Branch, NWSC), Charles Roberts (Head, Technical Procedures Branch, WXAP), and Dr. William Klein (Director, Techniques Development Laboratory, SDO). The agenda included visits to NMC and NWSC in Suitland and to GFDL on Pennsylvania Avenue. ■

## REGIONAL PERSONNEL CONFERENCE

Personnel program objectives, methods, and problems were discussed by Personnel Officers from the six regional offices and the National Weather Records Center at a meeting in the Central Office, March 15-19. This was the first regional personnel conference since 1962 and the first since the Bureau reorganization increased field responsibility in personnel areas. This responsibility was further increased after the conference, when Regional Directors were delegated authority for personnel actions through grade GS-13 (except GS-13 MIC and HIC positions and GS-12 administrative positions).

Speaking briefly to the conference, Dr. White commented on the spirit of dedication shown by civil service personnel in carrying out the difficult and varied duties characteristic of Bureau programs. He reiterated his conviction that present and future challenges require the employment of well-prepared professional and technical personnel and demand expanding programs of career counseling and development to assure that Bureau employees are fully equipped to discharge their obligations to the American public. In implementing these programs in the field, he said, the regional office is the focal point for action.

Dr. George Cressman, Director of National Meteorological Services, and R. C. Grubb, Director of Administration and Technical Services, also met with the Personnel Officers, emphasizing the need to select the best qualified candidates for promotion or resignation and to avoid regional "in-breeding" by actively considering candidates outside the region in addition to local personnel.

Several areas were selected for review and discussion at the conference; these included suggested revisions of the Merit Promotion Plan to increase its effectiveness, a revision of Bureau policy on return rights of employees on overseas or special assignments, and a review of objectives and plans for career development (including the production of an employee handbook).

Also at the conference, Equal Employment Opportunity policies were reemphasized to ensure that all applicants and employees are given equal treatment regardless of race, sex, or religion. The Personnel Officers planned their participation in a limited ADP system to collect personnel data for managerial analysis and statistical compilations. In addition, they explored the need for review of qualifications standards for Meteorologists and Meteorological Technicians as well as an analysis of these job categories in the field service.

During their stay in Washington, field Personnel Officers attended the regular March meeting of the Department of Commerce Personnel Council and had an opportunity to meet Commerce Director of Personnel John Will, his staff, and Personnel Officers from other Commerce bureaus. ■



Attending the Regional Personnel Conference at the Central Office were (front row, left to right) Gilbert Ehrsam, NWRC; K. C. Kraft, New York; Edward Cook, Fort Worth; Amey Wilson, Anchorage; and Guy Dorsey, Manager, Personnel. In the back row are George Scott, Kansas City; Walter Gully, Salt Lake City; Dr. White; Mr. Grubb; and John Norris, Honolulu.

Alejandro Nangka



## WXAP FOSTER CHILD

The thoughtfulness of the Central Office Weather Analysis and Prediction Division ensures that a 10-year-old Filipino boy may continue his education. Fourteen Division members have "adopted" Alejandro Nangka through the Foster Parent Plan.

Alejandro lives with his mother, two sisters, and a brother in one room, about six-feet square, in Pasay City, just outside Manila. Since his father is dead and his mother suffers with a painful form of rheumatism, the family breadwinner is his oldest sister, who earns about 50¢ a day as a laundress. This amount is not sufficient to provide food, clothing, shelter, and medical treatment for the family.

Under the sponsorship of the WXAP Division, Alejandro receives from the Foster Parent Plan a monthly cash grant of \$8.00, clothing, special medical care, and the chance to continue his education. Also, this assistance to Alejandro may enable his sister (age 12) and brother (age 11) to return to their studies.

Much to the delight of his foster parents, Alejandro was chosen as the model student in his third-grade class. ■

# New Facsimile Network Begins Operation

The new Forecast Center Facsimile Network became operational May 10, making available on a special channel to Forecast Centers long-range prognostic charts and additional computer products.

The addition of the Forecast Center Facsimile Network is a major step towards the goal of tailoring information to individual station needs. The older National Facsimile Network now carries mainly the type of information required by public service stations and by non-meteorological stations (such as FAA Flight Service Stations). More complex meteorological data, such as long-range prognostic information, is supplied to guidance centers and dispatch offices by the new network.

Weather stations at the following localities are part of the new Forecast Center Facsimile Network: Suitland, Md. (transmitting point at the National Meteorological Center); Washington, D. C. (WBAS); Raleigh, N. C. (WBAS); Atlanta (WBAS); Jacksonville (WBAS); New Orleans (WBO); Memphis (WBAS); St. Louis (WBAS); Kansas City (WBFC); Fort Worth (WBAS); San Antonio (WBAS); Albuquerque (WBAS); Los Angeles (WBAS); San Francisco (WBAS); Seattle (WBAS); Great Falls (WBAS); Salt Lake City (WBAS); Denver (WBAS); Minneapolis (WBAS); Chicago (WBFC); Cleveland (WBAS); Boston (WBAS); New York (WBAS and WBO); Miami (WBO); and Emergency Warnings Branch, Central Office. ■

## Work Measurement Program

For four weeks beginning May 9, approximately 700 Weather Bureau employees at 138 first-order stations kept hourly records of tasks performed and time spent on each job.

Filling in the Task Logs was the first project in a Weather Bureau Work Measurement Program, which is part of the Department-wide Production Measurement Program initiated a year ago in response to the President's emphasis on increased economy in Government.

After the Department's Production Measurement Program was established in May 1964, all Commerce bureaus and offices undertook measurability studies to identify functional areas in which similar tasks are performed repeatedly. The Weather Bureau's measurability study, conducted by the Management and Organization Division of the Central Office, found that functions related to the taking of surface observations and to aviation and public weather briefing involve more than half of the Bureau's field employees. Moreover, most of these functions are performed in first-order stations with seven or fewer employees.

Thus, the logical starting point for work measurement in the Bureau was in first-order stations which have seven employees or less and which are concerned primarily with surface observing and weather briefing. The Management and Organization Division developed a Task Log for reporting on these and other functions and tested the Log at eight field stations. Satisfactory results were obtained with a minimum of inconvenience to employees.

The Work Measurement Program consists of four phases, with the ultimate goals of establishing time/workload standards for functional operations and developing measures of productivity. In the first phase, general collection and analysis of time data, the tasks measured were: surface observations; pilot balloon observations; aviation telephone briefing; aviation personal briefing; general weather telephone briefing; general weather personal briefing; editing and display of teletypewriter and facsimile materials; and station management.

The completed Task Logs have been sent to the Regional Offices for review. The Management and Organization Division then will analyze the collected data, measuring the productivity of groups rather than the performance of individuals.

Following this analysis, the second phase of the program will begin. Work methods and procedures at a representative sample of stations will be reviewed by teams from Management and Organization Division and the Regional Offices. Differences in field station equipment, display, layout, and other factors will be considered in the development of work standards.

In the final two phases of the Bureau's Work Measurement Program, manpower standards will be developed and validated at a sample number of field stations. ■



## In Our Mail

Dear Sir,

I am writing to you today because I'm a weatherman myself. I have a ----- weather kit. I know how to get the facts but don't know how to forecast the weather. I try and I try but it comes out something I never plan. I read the instructions over and over on forecasting. Could you please help me? If you can please write to me.

Jim

P.S. If you can't, please forget about it and me and I will become an X weatherman.

The following letter was received at WBAS Akron:  
Dear Weather Bureau,

I don't know if you could explain this, but by any chance do you know how the weather changes. Do you have a little sketch of how the wind changes, if you know. I would be interested about science in 3rd grade, only I was too busy playing Rick and Dave Nelson. Now I'm busy playing Ben Casey and doctor Kildare, but I'm still interested in science very much! I want to be like you when I grow up. Well, I'll go now, but don't forget. Please send me a sketch.

Sincerely yours,

Mary Anne -----

After receiving a reply to the above letter, Mary Anne wrote the following:

Dear Weather Bureau,

Thank you for telling me some interesting things about weather. I'm sorry that the letter is short but I don't understand about this letter. Sometime my mom or dad will explain it. When it says *rain and snow*, it says use a coffee can or any straight sided can. Well, my parents said that we don't buy coffee in a can. We buy instant coffee. Do you suppose I could use a can that is marked baked beans?

Miss Mary Anne-----

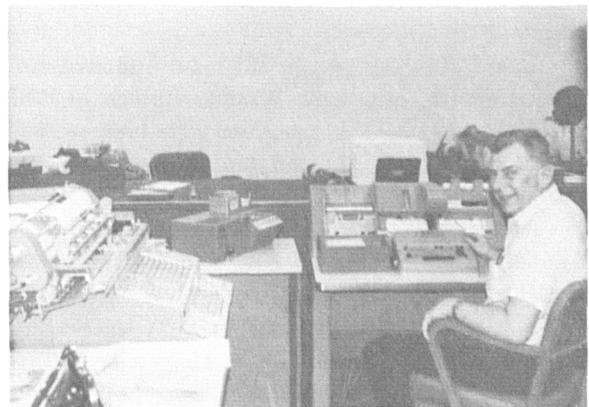
## NEWS from Region 1

### *Courtesy Pays at WBAS Greensboro*

Shortly after midnight on April 18, a man carrying a large and a small suitcase entered the Weather Bureau office at Greensboro, N. C. Identifying himself as a CIA agent, code number C 119, he said he was awaiting a special flight to Washington, where he was taking top secret papers. Although his story was obviously suspicious, the employee on duty, Johnnie Smith, and his relief man, William Miller, paid him the usual Weather Bureau courtesies. An hour or so later, the man telephoned the office, gave his code number, and asked if any inquiries had been made for him. About 4 a.m. a plane did land, the man boarded, and the pilot filed a flight plan for Atlanta. That evening, after the Bureau employees identified the man from photographs, police officials revealed that the man's "top secret papers" consisted of about \$20,000 which he had taken from a grocery store, and that "agent C 119" was in fact an armed criminal. Hazel Tatro, MIC at WBAS Greensboro, notes that if the men on duty at the station had not been polite to the "agent," is it hard to predict what might have happened.

### *Electronic Accounting Machine Installed*

An electronic accounting machine has been installed in the New York Regional Office for use in preparation of the payroll and related reports. William Amkraut, Supervisor of RONY Fiscal Section, assisted in the programming of the machine. The overall time saving is estimated at 7,280 man-hours per year.



Frank Sly, a payroll clerk in the New York Regional Office, with the new electronic accounting machine.

### *Regional Weather Watch Established*

The New York Regional Office has established a regional weather watch during normal duty hours to inform management officials about major weather conditions in the Region I forecast area. Using drops on the National Facsimile Network and Service "C" (soon to be supplemented by RAWARC and Service "A"), personnel from the Scientific Services and Operations Divisions prepare a display which includes surface and upper-air charts, prognostic material, severe storm warnings, the five-day outlook, etc. This display is the focal point for a daily 15-minute weather briefing when NMC products and field guidance forecasts are reviewed.

In addition to serving informational purposes, the regional weather watch is intended to promote planning for forecast development work and to foster evaluation of the effectiveness and adequacy of guidance material. ■



### *Manager, Operations Division*

The new Manager, Operations Division, at Fort Worth is Lawrence R. Mahar, who is returning to the Weather Bureau after working for over a year as Director of Meteorology at the Travelers Research Center Service Corporation, Hartford, Connecticut. Prior to this recent position, Mr. Mahar was MIC at Windsor Locks, Conn., from 1952 until 1963.

After serving in the U.S. Army Air Force Weather Service from 1941 to 1946, Mr. Mahar joined the Weather Bureau as a forecaster at the International Aviation Unit at LaGuardia Field. From 1947 to 1952, he worked at Washington, D. C., as staff meteorologist and later as Assistant Chief of the Station Facilities Section.

Mr. Mahar has a B.A. degree in mathematics from Middlebury (Vt.) College and since has attended M.I.T., Columbia University, and American University. A member of the American Meteorological Society, the American Geophysical Union, and the American Forestry Association, Mr. Mahar was awarded the Department of Commerce Silver Medal in 1957.

### *Citrus Weather Workshop Held in Texas*

Weather Bureau men joined agricultural researchers from state universities and the U.S. Department of Agriculture in a Regional Citrus Cold Hardiness and Cold Protection Workshop in Weslaco, Texas, at the Agricultural Experiment Station. Bureau participants included D. J. Haddock, Advisory Agricultural Meteorologist at Weslaco; Warren Johnson, fruit-frost expert from Lakeland, Fla.; Roy Simpson, fruit-frost expert from Pomona, Calif.; R. B. Orton, Texas State Climatologist; E. G. Bice, MIC at Brownsville; L. B. Hagood, Brownsville Radar Meteorologist; and J. A. Riley, of the Fort Worth Regional Office. Complimenting the Weather Bureau's fruit-frost forecast service, Dr. W. C. Cooper, Citrus Research Worker of Florida, said, "Weather forecasts are as important to the citrus growers' operation as spraying, dusting, and harvesting."

## NEWS from Region II

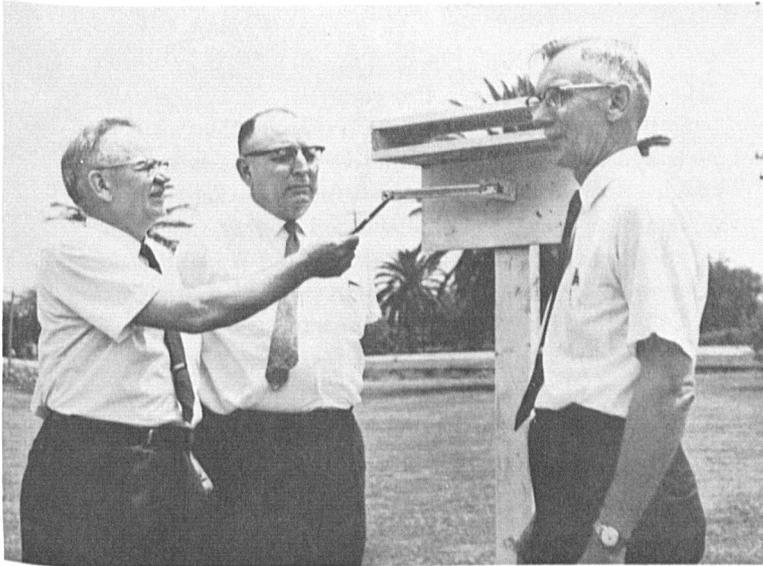


### *Regional Administrator*

Walter P. Roquemore, the Regional Administrator at Fort Worth, joined the Weather Bureau in 1931 as an Observer at Palestine, Tex. He later worked at Dallas, Fort Worth, and the Central Office, returning in late 1942 to Fort Worth, where he served in various capacities at the Regional Office. He was Administrative Officer at Fort Worth from 1950 until his recent assignment.

A member of the American Meteorological Society, Mr. Roquemore has attended the University of Texas, North Texas Agricultural College, the U.S. Department of Agriculture Graduate School, George Washington University, Maryland University, and Texas Christian University. In 1962, he received the Department of Commerce Silver Medal.

Fruit-frost experts Warren Johnson (left) and Roy Simpson (right) meet with Agricultural Experiment Station Superintendent W. R. Cowley in Weslaco, Texas.



*Regional Administrator*

Harold C. McComb, the Regional Administrator at Kansas City, joined the Weather Bureau as an Observer at Burlington, Iowa, in 1939. He next served at Des Moines and Buffalo, and then from 1944 to 1956 he was MIC at WBAS Columbia, Mo. He was Chief Airport Meteorologist at WBAS Kansas City from 1956 to 1957, when he became Administrative Officer at the Kansas City Regional Office, a position he held until his current assignment.

Mr. McComb has a B.S. degree from Iowa Wesleyan College and taught science in Iowa public schools. He has attended St. Louis University, Drake University, the University of Iowa, and the University of Missouri. A professional member of the American Meteorological Society, he is also a member of the American Geophysical Union.

*Policeman Honored for Tornado Warnings*

Special Weather Bureau awards have been presented to two policemen in Monroe, Wisc., for their exceptional actions in warning the public of approaching tornadoes. With danger to his life, Officer Karl O. Jensen tracked and radioed ahead information about a tornado that later hit Monroe and caused extensive damage. He narrowly escaped death or serious injury when the tornado overtook and demolished his patrol car. His efforts allowed the issuance of effective warnings for the Monroe area, preventing loss of life. Also at great personal risk, another officer on patrol duty near Monroe, Dwight Coplien, sent special radio reports on tornado activity to Civil Defense officials during the Palm Sunday disaster. Rheinart Harms, MIC at WBAS Milwaukee, presented the awards (signed by Dr. White) in a special ceremony.

*MIC Called "Best Weatherman"*

Ernest Sherrill, MIC at Vicksburg, Miss., received the following letter from a second-grade class: "This is letter writing time in our class. We have selected you to write our letter to. We think you are the best weather man in America. Your Friends, Grade Two-B."

*Weather Bureau Services Promoted at Broadcasters Meeting*

To support the Bureau's policy of providing the best possible user services, Donald Downey, Advisory Agricultural Meteorologist, and Robert Reinhold, MIC at Little Rock, attended the spring seminar of the Arkansas Broadcasters Association at Jonesboro, Ark. They demonstrated how radio stations could make effective use of weather information transmitted on the Mid-South Agricultural and Public Service Weather Circuit. A display showed the various kinds of weather information available on the teletypewriter loop for special interests—public, agriculture, aviation. Indicating Weather Bureau success in this promotional venture, Sam Anderson of radio station KFFA (Helena, Ark.) recommended the service as a "must" for radio stations. ■



Weather Bureau meteorologists assembled here attended the Region III State Climatologist and Advisory Agricultural Meteorologist Training Conference, held at Kansas City on March 17 and 18.

## NEWS from Region IV

### *Weather Bureau "Bird" Comes Home to Roost*

Observers Robert J. Connelly and Clifford E. Todd, Jr., probably set a new record for accuracy in a recovery operation on February 7, 1965. They released a radiosonde balloon from the S.S. *Contest*, which was enroute to San Francisco from the Far East. Rising to a height of about 4,500 feet, the balloon then was forced down by severe icing and landed on the flying bridge of the ship, only about 10 feet from the inflation shelter and launching area. To further compound this "strange" occurrence, the ship was steaming eastward at 15 knots, while the surface wind was from the southeast at 18 knots, thus requiring the balloon to reverse its course and catch up with the ship.

### *Mountain Meteorology Research Project*

Three Government agencies, the U.S. Weather Bureau, the U.S. Forest Service, and the U.S. Geological Survey, are sponsoring jointly a string of six observing stations across two ranges of the Wasatch Mountains, near Salt Lake City. Several of these stations are part of the regular climatological network, but others are special stations, some using equipment borrowed from summer observing points. Temperature and precipitation are being recorded at all stations, and a few locations are observing wind direction and speed, humidity and sunshine. The information gathered this winter, when unusually heavy snowfalls blanketed the area, is expected to be of considerable importance to meteorology, glaciology, and avalanche control. Weather Bureau employees participating in the project are Arlo Richardson, State Climatologist, and Eugene Peck, Hydrologist.

### *Safety Harness Protects Drivers*

As the aftermath of a tragic traffic accident two years ago when a Bureau employee in Montana was killed, a load-restraining harness for sedan delivery vehicles has been successfully tested in Region IV. In addition to protecting the driver and passenger from objects thrown from the rear in sudden stops or collisions, the harness also protects front-seat passengers from whip-lash accidents. The harness, constructed of nylon webbing, is strapped in place on the posts between the doors, with four straps extending to the floor to the eye bolts used to attach seat belts. The harness can be installed in about two minutes and removed in 30 seconds.

### *Los Angeles Forecast Center Honored by Air Force*

The Weather Bureau's Los Angeles Forecast Center has received a plaque in appreciation of its outstanding services to the U.S. Air Force Space Systems Division Weathervision unit at WBAS Los Angeles. The occasion was the 100,000th telecast briefing by the Weathervision facility, which utilizes closed circuit television to provide instant transmission of weather information from the Forecast Center to the pilots of the Los Angeles Air Force Station. The Weathervision operation began on a trial basis in 1957 and became permanent in 1958.



George Kalstrom, MIC Los Angeles Forecast Center, receives the award plaque from Major General Ben Funk, Commander of the Los Angeles Air Force Space Systems Division.

### *Do-It-Yourself Snow Stake*

The Regional Hydrologist of Region IV is employing a do-it-yourself snow stake which greatly simplifies the construction and handling of this instrument.

The key to this new snow stake is a replacement blade which is available commercially for pocket steel measuring tapes and can be obtained in lengths up to twelve feet. The 8-foot length with black graduations on a white enameled background costs about \$1. One of these tapes stapled, tacked, or cemented to a piece of 2" x 2" x 8' lumber procured locally, makes an excellent snow stake. The blades can be carried easily by inspectors on their trips or can be mailed.

This same idea may be employed for making dipsticks for use with storage gages or for any other use which requires measuring a depth in inches or feet. ■

## NEWS from Region V

### *New Tower Dedicated at Anchorage*

The new tower at Anchorage International Airport was dedicated on March 27, 1965, the first anniversary of the "Good Friday" earthquake which destroyed the original tower. The FAA dedicated the tower in honor of the air traffic controller, William Taylor, who was killed while on duty during the earthquake. The new pentagon-shaped structure rises 60 feet above the field. The substructure houses a 75-kilowatt generator for standby power during emergencies.

### *Difficult Winter Reported at St. Paul Island*

Bureau personnel at St. Paul Island, Alaska, report an especially severe winter this year, with the station being completely isolated for the first time. A series of snowstorms complicated by mechanical failures of bulldozers kept the airplane landing field in poor condition much of the time, limiting air traffic to an occasional Coast Guard plane. During March, the airfield had a landing strip 80 feet wide cleared down the center with drifts on both sides from 4 to 12 feet high. Several patients were evacuated in medical emergencies, one by a sea plane.



The new tower at Anchorage Airport is visible beyond the wing of an airplane.

Attending the MIC/TIC Conference for Region V, April 22 and 23, were (standing left to right): Charles Hanas, Annette; Dawaine A. Shoemaker, Kotzebue; Frederick Day, Cold Bay; John Baker, King Salmon; LeRoy Borg, Bethel; Verdin Liddell, McGrath; Albert Gorman, Yakutat. Seated for the photograph are Ashby Craft, Nome; Joseph Bauer, Sr., Juneau; William Duggin, Fairbanks; and G. Philip Weber, Anchorage.



*Regional Office Appointments Announced*

Key appointments in the Honolulu Regional Office which have been announced are as follows:

- Regional Director—James W. Osmun
- Deputy Regional Director and Manager,  
Operations Division—Raymond L. Belknap
- Regional Administrator—Bill L. Johnson
- Regional User Services Representative—  
Robert F. Shaw
- Regional Climatologist—Saul Price
- Head, DATAC Branch—John P. Lee

*Regional Director*

James W. Osmun, Regional Director at Honolulu, entered the Weather Bureau in 1930 as an observer at New York City and worked at Atlanta, Boston, and the Central Office before joining the Army Air Corps in 1940. In the Corps, he served as deputy to the Chief of Weather Services, as Commander of the 42nd Weather Squadron, and later as Weather and Operations Officer of the Mediterranean Allied Reconnaissance Wing.

In 1946, Mr. Osmun returned to the Bureau at New York City, where he served in various capacities, becoming Regional Administrative Officer in 1954. During 1959 he was Director of Aviation Weather Services at the Central Office and then was made Deputy Chief of Bureau, a position he held until his current assignment.

Mr. Osmun has a B.S. degree from Rutgers University, an M.S. degree from M.I.T. and has done further graduate work at New York University. As a United Nations representative, he has conducted a survey for the World Meteorological Organization, analyzing the national meteorological services of Brazil and Uruguay.



An honorary member of the Uruguay Academy of Sciences, he is also a member of the American Meteorological Society, the Institute of Aeronautical Sciences, and the New York Academy of Sciences. He has written many scientific papers and has had articles published in the *AMS Bulletin* and the *Transactions*, American Geophysical Union.

*Manager, Operations Division*

Raymond L. Belknap, who until recently was located at the Central Office, is the new Manager, Operations Division and Deputy Director of the Honolulu Region. He joined the Bureau in 1939 at WBO Norfolk (Va.) and during the next ten years was an aviation forecaster at WBAS LaGuardia Field, New York. After 18 months as MIC at WBAS Keflavik, Iceland, Mr. Belknap came to the Central Office, where he held several positions, first in the Plans and Program Management Office and then in the Weather Analysis and Prediction Division. His most recent position was Head, Operations Branch, WXAP.



A professional member of the American Meteorological Society, Mr. Belknap has a B.A. degree from Upper Iowa University and has done graduate work in meteorology at New York University.

*Oceanographic Commission Meets In Hawaii.*

The Intergovernmental Oceanographic Commission on the International Aspects of the Tsunami Warning System met for technical discussions at the University of Hawaii, April 27 to 30. Region VI of the Weather Bureau was represented by the Director, James Osmun, and Climatologist, Saul Price. Those registered for the conference included delegates from China, Okinawa, the Philippines, Japan, Peru, Chile, Mexico, New Zealand, and the U.S.S.R.

### *Regional Administrator*

Bill L. Johnson, the Regional Administrator, has been Administrative Officer in Honolulu since 1952. He entered Government service with the Bureau of Mines in Salt Lake City in 1942 and later worked at their Washington and College Park (Md.) offices. Transferring to the Weather Bureau in 1946 as Administrative Officer of the Los Angeles region, he also worked with the Arctic Project at Resolute Bay and at Washington and in the Central Office Personnel Division prior to his transfer to Honolulu.

Mr. Johnson attended Arizona State College and Glendale College. He is a member of the Policy Board of the Central Board of Examiners of the Pacific and a member of the American Society for Public Administration (1964-65 president of Honolulu Chapter).



### *Regional User Services Representative*

The Regional User Services Representative is Robert F. Shaw, who joined the Weather Bureau in 1941 at Huron, S. Dak. After serving with the Air Weather Service during World War II, he rejoined the Bureau at Sioux Falls. Subsequently, he worked as a prognostic analyst at the National Meteorological Center in Washington, as an aviation forecaster at WBAS Honolulu, and most recently as Supervisory Quality Control Officer for the Pacific Region.

A professional member of the American Meteorological Society, Mr. Shaw has a B.S. degree from Huron College and has done graduate work at the University of Maryland and the University of Hawaii.



## Retirements

### **RALPH W. SCHULTZ,**

MIC at Fargo, N. Dak., retired on April 15, concluding almost 37 years of Government service. Mr. Schultz has a B.A. degree in physics and mathematics from Nebraska Wesleyan University. Joining the Bureau in 1928 at Omaha, he later worked at El Paso before coming to Fargo in 1937. His address is 1457 10th Street North, Fargo, N. Dak.

### **MARJORY L. SIMONTON,**

a Rawinsonde Specialist at WBAS Great Falls, retired March 19 after more than 22 years of service to the Weather Bureau. She joined the Bureau in 1942 at Seattle and soon after transferred to Great Falls, where she remained until her retirement. Miss Simonton attended Great Falls College of Education. Her address is 1304 Eighth Avenue South, Great Falls, Mont.

### **EDWARD L. NORRIS,**

a Meteorologist at WBO Kansas City, retired April 11, completing more than 33 years of Government service. After working for the Federal Land Bank in Wichita from 1931 to 1938, he joined the Weather Bureau there. In 1943, he moved to WBAS Kansas City, where he stayed until shifting to the Weather Bureau Office in 1957. He has a B.A. degree in physics and chemistry from Friends University. His address is 7916 W. 59th Terrace, Merriam, Kans.

### **LOUIS H. CRAFT,**

a Meteorologist at WBAS Prescott, Ariz., retired May 14 after more than 22 years of service in the Weather Bureau. He joined the Bureau at Prescott in 1942. His address is 612 Maple Street, Prescott, Ariz.

# Retirements

**RAYMOND G. SMITH,**

a Meteorologist at the National Meteorological Center (Suitland, Md.), retired May 21, with five years of service in the Weather Bureau and over eight years of military service. Mr. Smith entered the Bureau in 1960 at NMC. He has attended the University of Chicago, St. Louis University, and Penn State University. His address is 3650 39th Street, N. W., Washington, D. C.

**EVONA B. GROSSENBACHER,**

a Clerk Stenographer in the Central Office Communications Division, retired May 20, after more than nine years of service in the Weather Bureau. Mrs. Grossenbacher joined the Bureau at the Central Office in 1956. Her address is 7805 Harwood Place, Springfield, Va.

**LAWRENCE O. OLIVER,**

of WBAS Great Falls, retired on April 30 after nearly 29 years of service in the Weather Bureau. He came to Great Falls in December 1943 as a weather service flight advisor to the ferry command at Gore Field. Mr. Oliver won superior performance awards from the Department of Commerce in 1959 and again in 1964 for his work in flood warnings. His address is 1616 13th Avenue, S. W., Great Falls, Mont.

**AUBREY L. FORD,**

a Property Management Assistant at the Fort Worth Regional Office, retired April 20 after more than 13 years of Government service. He joined the Bureau at Fort Worth in 1959. A veteran of World War II, Mr. Ford has attended Temple Junior College and Trinity University. His address is 2513 Sargent Avenue, Fort Worth, Tex.

**ALFRED W. TAYLOR,**

Meteorologist in Charge at Savannah, retired April 30, concluding more than 36 years of service to the Weather Bureau. He entered the Bureau at Montgomery, Ala., in 1929 and worked at Richmond, the Central Office, Tampa, and Boston, before coming to Savannah in 1944. Mr. Taylor has a B.A. degree from the University of Tampa and also attended George Washington University and the University of Tennessee. His address is 14 Parkwood Drive, Savannah, Ga.

**MYRTLE L. WENTZ,**

a Management Technician at the Central Office Budget and Management Division, retired on May 26, after more than 23 years of Government service. Mrs. Wentz came to the Bureau in 1960 from the U.S. Naval Weapons Plant; she also worked at the U.S. Naval Gun Factory and the U.S. Navy Yard. Her address is 2500 Lee Highway, #1, Arlington,

## Length of Service Awards

### Region I

**40-YEAR AWARDS**

Leslie C. Fields  
WBAS Syracuse, N.Y.  
Leland T. Pierce  
WBSC Columbus, Ohio

**25-YEAR AWARDS**

Robert Appleton  
WBAS Wilmington, Del.  
Charles F. Dorer  
WBAS Washington (Dulles)  
James C. Hunter  
WBAS Washington (WNA)  
Russell E. Johnson  
WBAS Washington (WNA)  
John H. Pike, Jr.  
WBAS Allentown, Pa.  
George L. Poole  
AWP Boston  
Philip Stone  
WBAS New York (JFK)

**35-YEAR AWARDS**

James J. McCloy  
RO New York  
Dwight A. Rigney  
RO New York

**20-YEAR AWARDS**

John J. Barter  
WBAS Nantucket, Mass.  
Albert Intonti  
WBAS Boston  
Edward J. Maree  
WBAS New York (JFK)  
John E. McNamara  
WBAS Syracuse, N.Y.  
Elias Morin  
WBAS New York (LaGuardia)

**15-YEAR AWARDS**

H. Nicholas Velasquez  
WBAS New York (JFK)  
Carl L. Webber  
WBAS Buffalo, N.Y.

### Region II

**35-YEAR AWARDS**

Walter R. Davis  
NHC Miami  
Jack Hudnall  
WBAS W. Palm Beach  
Phillip D. Thomas  
NHC Miami

**25-YEAR AWARDS**

Claude W. Allen  
WBAS Lake Charles  
Robert M. Gardner  
WBO Apalachicola

**15-YEAR AWARDS**

Fred Cherry  
WBRP Picayune  
Hubert R. Fedrick  
WBAS Del Rio, Tex.  
James C. Hughes  
WBAS Nashville  
Gay F. Weightman  
RO Fort Worth

**30-YEAR AWARD**

Richard J. MacConnell  
RO Fort Worth

**20-YEAR AWARDS**

Adam N. Cardenas  
USWBO Monterrey, Mexico  
Billie J. Cook  
WBAS Fort Worth  
Kenneth T. Harlan  
WBAS Memphis  
Clifton E. Holsapple  
RO Fort Worth  
Julius C. Koehler  
WBAS Little Rock  
Robert Levine  
NHC Miami  
Francis X. Martin  
WBAS San Juan  
Carter E. Moore  
WBO Galveston  
Ada Velez  
WBAS San Juan

### Region III

**30-YEAR AWARD**  
Loren J. N. Allison  
WBAS Pueblo

**25-YEAR AWARD**  
George A. Krueger  
RRC Joliet

**15-YEAR AWARD**  
Lawrence H. Hughes  
RO Kansas City

**20-YEAR AWARDS**  
Richard R. Byrd  
WBO Kansas City  
Lorin W. Grace  
WBAS Casper  
Milton R. Lefebvre  
WBAS Minneapolis  
Fred A. Meditz  
RRC Joliet  
Dale W. Mohler  
RO Kansas City  
Mary E. Murphy  
RO Kansas City

### Region V

**25-YEAR AWARD**  
Burt Bollenbach  
WBAS Anchorage

**15-YEAR AWARDS**  
Verdin E. Liddell  
WBAS McGrath  
Alvida H. Nordling  
WBAS Anchorage  
Alva D. Smallwood  
WBAS Anchorage

**20-YEAR AWARDS**  
Edith A. Davis  
RO Anchorage  
James R. Little  
WBAS Annette  
Robert E. Sistrunk  
WBAS Anchorage  
James W. Zoller  
WBAS Anchorage

### Region VI

**20-YEAR AWARD**  
Oliver E. Pelkey  
WBAS Marcus Island

**15-YEAR AWARD**  
Minoru Murakami  
WBAS Honolulu

### National Weather Records Center

**30-YEAR AWARD**  
Jacob T. B. Beard

**20-YEAR AWARDS**  
Lillian A. Conway  
Sesto G. B. Martin  
Charles F. Simon

**15-YEAR AWARD**  
Way M. Mease, Jr.

### Region IV

**40-YEAR AWARDS**  
Alfred W. Anderson  
WBAS San Diego  
Louis R. Jurwitz  
WBAS Phoenix  
Hugh D. Spangler  
RO Salt Lake City

**25-YEAR AWARDS**  
Charles W. Inskip  
RO Salt Lake City  
William H. Kohnke  
WBAS San Francisco  
Vail P. Schermerhorn  
RFC Portland, Oreg.  
Charles A. Smith  
WBAS Fresno  
Vernon W. Wallace  
WBO Burns, Oreg.

**35-YEAR AWARDS**  
Jack H. Calvert  
WBAS Sacramento  
Ralph W. Hester  
WBAS Seattle-Tacoma  
Russell M. Short  
WBAS Boise

**30-YEAR AWARD**  
Paul E. Chrestenson  
WBAS Bakersfield

**20-YEAR AWARD**  
Patricia A. Burns  
UAU Santa Monica

**15-YEAR AWARDS**  
Donald L. Carte  
WBAS Great Falls  
Loren E. Fagan  
WBRS Las Vegas  
Helen R. Seddon  
RO Salt Lake City

### Central Office

**35-YEAR AWARDS**  
Wallace Brewer  
Hydro.  
Torrence H. MacDonald  
NWSC  
Ruth E. Ochs  
Federal Coordinator  
Herbert C. S. Thom  
Climat.

**30-YEAR AWARDS**  
Virginia M. Anderson  
Budget & Acctg.  
Raymond P. Hogan  
Budget & Acctg.  
Clarence R. Jordan  
DATAC  
Jack McClaren  
NWSC  
Edwin S. Thompson  
Hydro.  
Charles S. Vitale  
Climat.  
Ralph S. Wolbach  
DATAC

**15-YEAR AWARDS**  
Evelyn L. Boston  
NMC  
Joseph R. Cefaratti  
NMC  
Solomon M. Levine  
NMC  
Mary Marini  
NWSC

**25-YEAR AWARDS**  
Thomas C. Council  
Aviation Weather Affairs  
Jesse R. Gulick  
NWSC  
Charles B. Haegele  
Systems Dev. Office  
Curtis F. Kambic  
Climat.  
Robert J. List  
OMR  
Arnold M. Recht  
NHRL Miami  
Lloyd R. Rhine  
Systems Dev. Office

**20-YEAR AWARDS**  
Max M. Feinsilber  
WXAP  
Catherine Frain  
NWSC  
Stanley Herman  
NMC  
Arthur R. Melick  
Adm. Oprs.  
John C. Straiton  
Comm. Div.  
Gordon C. Thiel  
NMC

**15-YEAR AWARDS**  
Donald Mercer  
NWSC  
George T. Shafley  
Budget & Acctg.

# DEATHS



**CHARLES C. HESS,**

a Meteorological Technician at WBAS Little Rock, died April 12. Mr. Hess had just retired from the Bureau on March 26 after almost six years of service. He joined the Weather Bureau in 1959 at Little Rock. Mr. Hess served in the U.S. Navy from 1950 to 1954 and attended Monterey Peninsula College. He is survived by his widow, Mrs. Wilma Jean Hess, and several children, of 7107 East Wakefield Drive, Little Rock, Ark.

**ROSS O. MILLER,**

who was Official in Charge at Tacoma, Wash., at the time of his retirement in 1950, died in Tacoma on February 25 at the age of 76. Mr. Ross had over 36 years of service in the Weather Bureau, entering the Bureau in 1913 at Wichita and working at Detroit, Santa Fe, Seattle, Williston (N. Dak.), and Tacoma.

**FRANK E. SMALLWOOD,**

a Digital Computer Systems Operator at the National Meteorological Center (Suitland, Md.), died April 14. Mr. Smallwood had served in the Government for nearly 30 years, working at the Labor Department, Railroad Retirement Board, and the War Department before transferring to the Weather Bureau in 1946. He is survived by his widow, Mrs. Frank Smallwood, 336 14th Street, N. E., Washington, D. C.

**LESLIE ALESTOCK,**

a driver in the Central Office General Services Section, died April 11. Joining the Bureau at the Central Office in 1942, Mr. Alestock had served the Government more than 22 years at the time of his death. He is survived by three sisters and a brother, Elmer Alestock, of 313 34th Place, N. E., Washington, D. C.

**CHARLES K. HUNSAKER,**

a Meteorological Technician at WBAS Toledo, died March 1. After military service during World War II, Mr. Hunsaker entered the Bureau at Bismarck, N. Dak., in 1945. He is survived by his widow, Mrs. Jean S. Hunsaker, and a son of 1607 Addington Road, Toledo, Ohio.

**WELCOME B. ORR,**

a Meteorological Technician at WBAS Dodge City, died May 4. Mrs. Orr entered the Weather Bureau at Kansas City in 1944, and later transferred to Dodge City, where she served until her death. She is survived by her husband, John R. Orr, of 1002 Avenue X, Dodge City, Kans.

# TOPICS

JULY - AUGUST

1965

VOLUME 24

NUMBER 4

UNITED STATES DEPARTMENT OF COMMERCE

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION • WEATHER BUREAU



# TOPICS

JULY-AUGUST  
1965

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THE COVER: A Navy Skywarrior returns to Puerto Rico after Project Stormfury cumulus-seeding experiments in the Caribbean. Photo by Claude Ronne, Woods Hole Oceanographic Institution.

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# DR. WHITE, ADM. KARO HEAD ESSA

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Secretary of Commerce John T. Connor (left and Dr. J. Herbert Holloman (right), Assistant Secretary for Science and Technology, stand with Dr. White, the new ESSA Administrator, and Adm. Karo, Deputy Administrator, at the swearing-in ceremonies. Adm. Karo formerly was Director of the Coast and Geodetic Survey.

Dr. Robert M. White, Administrator of the Environmental Science Services Administration, and Adm. H. Arnold Karo, Deputy Administrator, were sworn in by Secretary of Commerce John T. Connor on July 27. This ceremony, held at the Department of Commerce in Washington, followed Senate confirmation on July 21 of the President's nomination of Dr. White and Adm. Karo to fill the top two positions in the new Government agency.

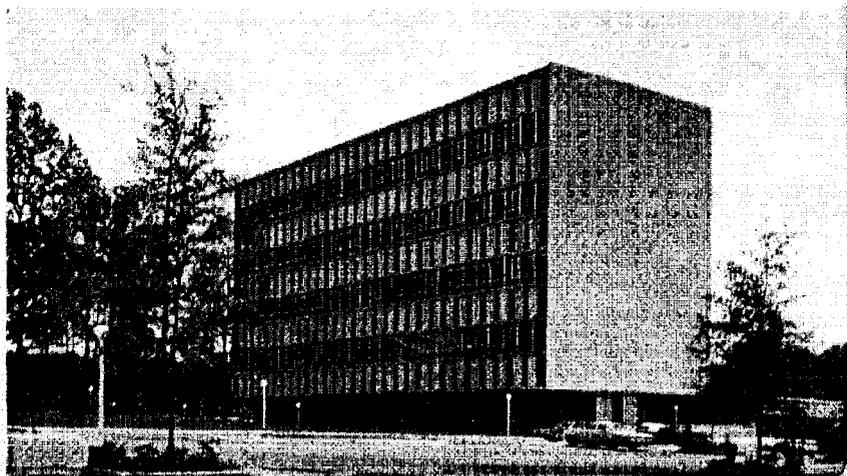
ESSA came into existence on July 13, 60 days after the President submitted his consolidation plan to Congress. At that time, Secretary Connor appointed Dr. George P. Cressman as Acting Director of the Weather Bureau and Rear Adm. James C. Tison, Jr., as Acting Director of the Coast and Geodetic Survey.

Headquarters for ESSA is the Washington Science Center at Rockville, Md. The Administrator and his supporting staff, the Deputy Administrator and his staff, and administrative support activities are housed in a new building at the Rockville site. Filling in the vacated space at the Weather Bureau Central Office are the Office of Meteorological Research and the Data Acquisition Division (both of which had been located at another Washington building).

The basic organization of ESSA will be outlined in Department Order No. 2-B, which is expected to become effective some time in October. ■

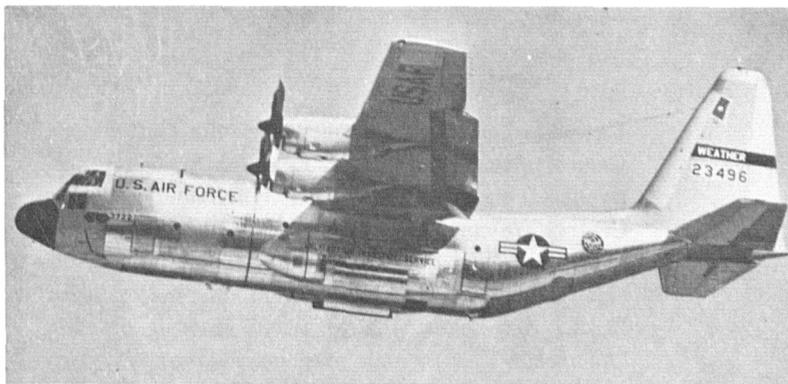


Dr. George Cressman



Building No. 5, Washington Science Center

# HURRICANE SEASON IN FULL SWING



Air Force hurricane reconnaissance this year is being flown with the weather-instrumented Lockheed WC-130 Hercules.

The 1965 hurricane season is now in progress, and weather stations along the eastern coast, the Gulf of Mexico, and in the Caribbean are once again keeping an especially wary eye on oceanic storm-breeding areas.

The names held in readiness for hurricanes and tropical storms which develop between June and November are Anna, Betsy, Carol, Debbie, Elena, Frances, Gerda, Holly, Inga, Jenny, Kara, Laurie, Martha, Netty, Orva, Peggy, Rhoda, Sadie, Tanya, Virgy, and Wenda.

Instruments ranging in complexity from the relatively simple shipboard barometer to the sophisticated TIROS weather satellite are aiding meteorologists in their hurricane watch.

TIROS X, launched July 1, has joined the weather satellites already in orbit and should provide invaluable information over data-sparse ocean areas.

Weather Bureau, Air Force, and Navy aircraft loaded with special electronic gear have been moved to bases on the coast of Florida and in the Caribbean, ready to fly daily missions to investigate suspicious disturbances over the ocean.

Air Force hurricane missions this year will be flown with weather-instrumented WC-130 Hercules aircraft. This versatile, four-engine plane will penetrate storms at 10,000 feet for low-level data, then climb to 30,000 feet for high-level probes. The Hercules will be flown by the USAF Hurricane Hunters (53rd Weather Reconnaissance Squadron) from Ramey Air Force Base, Puerto Rico. WB-47 aircraft, based at Hunter Air Force Base, Georgia, will provide added storm overflight capability. The Air Force will be responsible for reconnaissance in the northwestern Caribbean, in the Gulf of Mexico, and along the Atlantic coast out to about 500 miles.

Farther out in the Atlantic and Caribbean, reconnaissance duties will go to Navy WC-121 Super Radar Constellations. These planes will fly out over the ocean as far as 1,500 miles to investigate and track storms. The Navy's reconnaissance planes are stationed at Jacksonville, Fla.

Four aircraft of the Weather Bureau's Research Flight Facility will fly investigative missions into hurricanes from their base at Miami. The Weather Bureau planes, manned by civilian contract pilots and Bureau scientists and technicians, will include two DC-6's, one C-54, and one WB-57.

If a storm nears the coast, powerful radar units from Puerto Rico to Maine are set to pinpoint its exact position and track its course. Besides regular weather radar at strategic coastal points, Navy and Air Force sites along with cooperating private agencies such as the University of Miami and Massachusetts Institute of Technology will provide radar coverage during the hurricane season.

Storm data from all sources will be fed to the Weather Bureau's National Hurricane Center in Miami. Communications to and from the Center have been made as secure as possible with the installation of an underground pressurized cable to the nearest telephone exchange and a parallel cable by an alternate route. Additional emergency communications are available through radio links to other Weather Bureau facilities, area police, civil defense, and public safety offices. The Florida Civil Defense network has provided emergency broadcast links, by which key local radio stations can be reached. A diesel power unit, sufficient to supply all necessary electricity, has been installed nearby for use in case normal power sources fail during a storm.

Other Bureau offices—at New Orleans, Washington, and Boston — serve as Hurricane Warning

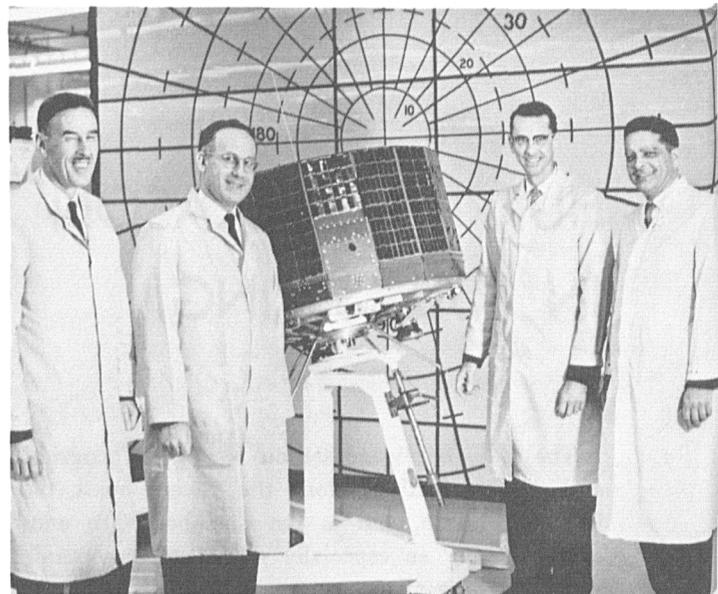
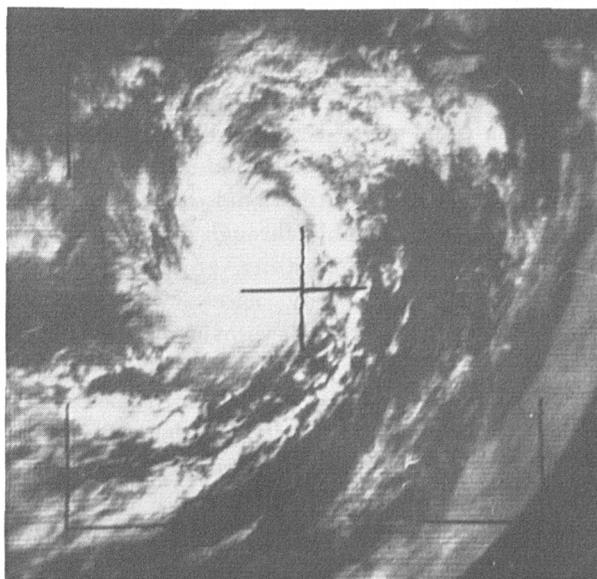
Centers when a storm approaches the Gulf States, Central Atlantic, or New England areas, respectively. This year, all of the Hurricane Warning Centers are connected by direct line telephones and other improved communications devices to permit rapid exchange of information on the storms. WBAS San Juan, Puerto Rico, is also on this "hurricane line" which may be used by any two or all of the Centers at the same time. ■

## TIROS X AIDS HURRICANE COVERAGE

The orbit of TIROS X, launched from Cape Kennedy on July 1, has been called the best yet achieved in the weather satellite series.

"The orbit is almost perfect for space photography," Robert Rados, TIROS project manager at NASA's Goddard Space Flight Center, said. "We were shooting for an Equator crossing time of 10:45 and we were only one minute off."

The first Weather Bureau-funded satellite was boosted into space by a Delta launch vehicle at 11:07 EST. It has an apogee of 517 miles and a perigee of 458 miles above the earth.



Flanking TIROS X are (left to right) Herbert I. Butler, Chief of Goddard Spaceflight Center's Operational Satellites Office; Abe Schnapf, RCA's TIROS Project Manager; David S. Johnson, Director of the Weather Bureau's National Weather Satellite Center; and Robert M. Rados, Goddard's TIROS Project Manager. Their smiles were even broader on July 1, when TIROS X was put into a near-perfect polar orbit.

TIROS X is in a sun-synchronous, near-polar orbit. It drifts eastward about one degree a day—the same rate and direction as the earth moves around the sun. This provides maximum lighting for photography and is ideal for keeping the spacecraft's batteries fully charged and its temperature at the desired level. The satellite completes an orbit every 100.6 minutes.

The latest TIROS joins TIROS VII, VIII, and IX, which are still operating in photographing storm-breeding areas where hurricanes and typhoons are born. The launch was designed to make certain at least one storm tracker will be working during the hurricane season. Just how much longer TIROS VII, VIII, and IX will operate is hard to determine. Engineering checks were still under way on July 7 when TIROS X sighted tropical storm Bernice off the west coast of Mexico.

TIROS X photographed this tropical depression off the west coast of Africa (lower right) on August 20. This was the first indication of the Low's spiraling circulation.

TIROS X is not a part of the NASA/Weather Bureau TIROS Operational Satellite (TOS) System which is scheduled to begin early next year. It is one of three satellites purchased by the Weather Bureau in 1963 to be used to assure continuity of satellite observations for operational purposes.

As has been the case with the previous nine research and development weather satellites in the TIROS series, TIROS X will be controlled during its lifetime by the NASA ground station complex. Weather data will be processed by the Weather Bureau for use in daily forecasting.

The 280-pound spacecraft is almost identical to TIROS VI. It has two one-half inch vidicon television cameras pointing out from the base of the spacecraft. Each picture covers 800 miles on a side or 640,000 square miles when the cameras are looking straight down. Radio commands from the ground set a clock in TIROS X to trigger the cameras for picture sequences every 60 seconds, or more than 400 pictures daily. Resolution is about two miles at the center of each picture. The pictures are stored on one of two tape recorders in the spacecraft or sent directly to a Command and Data Acquisition station when the satellite is within 1,500 miles of the station. TIROS X does not carry radiation sensors or Automatic Picture Transmission equipment. ■

## PROJECT STORMFURY RESUMES EXPERIMENTS

Project Stormfury is resuming hurricane and cumulus cloud seeding operations this season—its first experiments since August 1963.

The cumulus cloud seeding program planned for 1965 has been completed successfully, and all Project aircraft are now on 72-hour alert for participation in hurricane seeding experiments.

Project Stormfury is a joint Weather Bureau-Navy program of scientific experiments designed to explore the structure and dynamics of hurricanes.

The Project's objectives are to achieve better understanding, improve prediction, and investigate the possibility of modifying some aspects of these destructive storms.

After preliminary tests in hurricane Esther of 1961, Project Stormfury was established in 1962 by agreement between the Department of Commerce and the Department of the Navy.

### **Cumulus experiments completed**

Since hurricane energy depends on tropical convective processes, experiments designed to explore such processes in simple tropical cumulus clouds are an integral part of Project Stormfury activities.

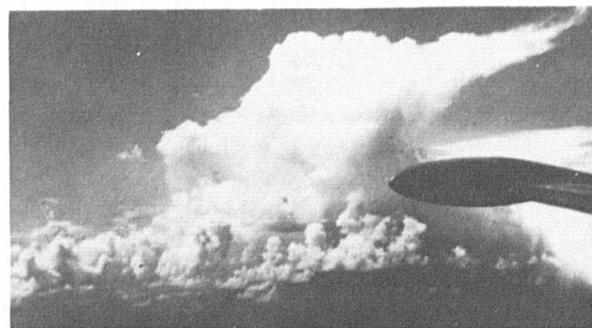
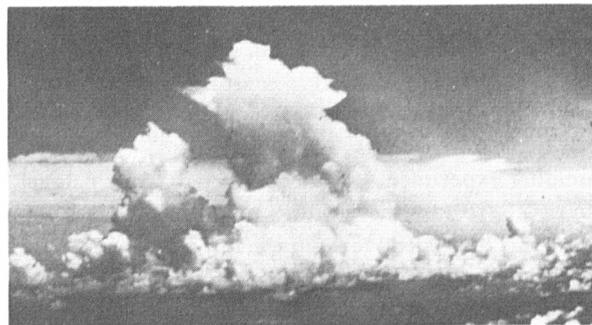
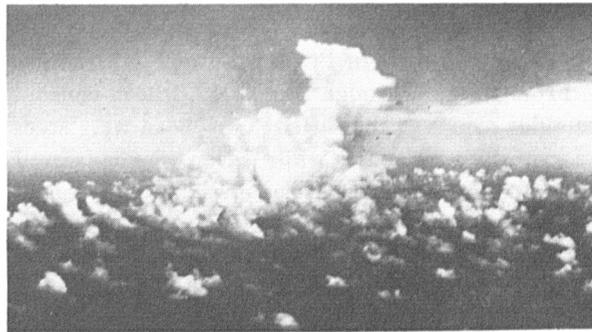
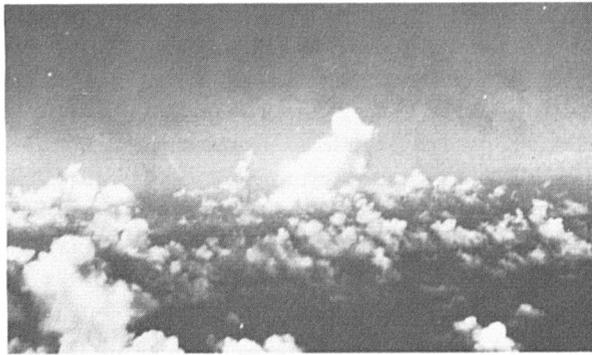
From July 28 through August 10, fifteen isolated cumulus clouds in the eastern Caribbean were seeded with silver iodide, while seven clouds served as controls in the study. The missions were staged from Roosevelt Roads, Puerto Rico.

Clouds were selected for experimentation on the basis of a statistically randomized plan, and seeding effects will be studied by comparing the behavior of seeded and unseeded clouds. Project scientists did not know which clouds were seeded until each day's operation was completed.

The cloud sample in this season's cumulus seeding program was much larger than that used in the first experiments two years ago. In 1963, cumulus experiments were conducted from August 17 to 21, to test the seeding method, to allow the scientists to perfect techniques for monitoring and evaluating results of the seeding, and to study the dynamics of individual clouds. On each day, three growing cumulus clouds with tops between 18,000 and 24,000 feet were selected, and two were seeded, while the third served as a control. Several of the seeded clouds were observed to grow at a rapid rate, while the control clouds remained relatively quiescent, indicating that the latent heat released by the change of state from supercooled liquid to ice particles may have contributed to increased cloud buoyancy.

### **Hurricane seeding planned**

The Project's hurricane experiment has been redesigned this year, with plans calling for more massive, sustained seeding than in previous experiments. The basic technique involves seeding clouds surrounding the eye in order to release latent heat. This may trigger a self-sustaining chain of events that will lead to a reduction of wind speed near the eye.



A supercooled cumulus cloud explodes after being seeded with silver iodide in 1963 experiments. The photographs were taken (1) immediately after seeding, (2) 9 minutes after seeding, (3) 19 minutes after seeding, and (4) 38 minutes after seeding.

"The object of our experiments," says Dr. Joanne Simpson, Director of Project Stormfury, "is the heart of the hurricane's heat engine, the towering cumulonimbus clouds that form the wall of the eye. These clouds are seeded from the air with silver iodide crystals in a manner calculated to disrupt the balance of forces controlling the position of the clouds, so as to cause their rearrangement and outward migration."

When hurricane Beulah was seeded in 1963, the central pressure of the eye rose and the area of maximum winds moved away from the storm's center. However, natural oscillations within the hurricane could well have accounted for these changes.

In each previous hurricane eyewall experiment, a single line of silver iodide generators was dropped at the upwind edge of the eyewall clouds. This year, the eyewall will be bombarded five times at two-hour intervals in an attempt to produce more pronounced, longer lasting effects. Instrumented Navy, Weather Bureau, and Air Force planes will monitor the area for about 17 hours—from three hours before the first seeding until six hours after the final one—in order to record any changes in storm characteristics.

#### **Rainband may be seeded**

If possible, a new experiment designed to seed a hurricane rainband will be attempted in 1965. Rainbands—curved bands of clouds with heavy precipitation—are normally found at some distance from the storm's eye, but may constitute an important link in the chain between relatively simple cumulus convective activity and a mature hurricane. A curtain of silver iodide canisters will be dropped across the rainband, with monitoring before and after the seeding by Project aircraft.

#### **17 planes used**

Seventeen planes provided by the Navy, Weather Bureau, and Air Force are taking part in 1965 Stormfury operations. Silver iodide generators are released by a Navy Skywarrior. The other aircraft, flying at levels from 1,000 to 40,000 feet, observe and record seeding results.

The Research Flight Facility's four aircraft—two DC-6's, one C-54, and one WB-57—monitor the operations by recording meteorological observations from 1,500 to 35,000 feet.

Super-Constellations from the Navy's Hurricane Hunter Squadron AEWRON FOUR, based at Jacksonville, provide airborne control of all aircraft in the operation and measure a number of meteorological parameters. During the past year, one of the Squadron's planes has undergone extensive modernization. An improved Doppler radar, a navigational computer, and a radar altimeter have been installed, and new and more accurate meteorological sensing equipment has been added, including a rocketsonde system which provides data up to 25,000 feet above the aircraft. The Navy plans to add these devices to the Squadron's other planes.

Skywarriors of the Navy's Heavy Photo Reconnaissance Squadron 62, also based at Jacksonville, drop silver iodide canisters in all experiments and provide photographic reconnaissance.

An additional Skywarrior from the Naval Ordnance Test Station at China Lake, California, participates in seeding, monitoring, and photographic reconnaissance. This aircraft is equipped to drop a large number of silver iodide canisters if necessary.

The Air Force is providing a C-130 Hercules for dropsonde measurements, as well as a high-level aircraft for wind observations and photography in the hurricane experiments.

### **Project direction**

Dr. Joanne Simpson of the Weather Bureau's Office of Meteorological Research is Director of Project Stormfury, with Dr. R. Cecil Gentry, Director of the National Hurricane Research Laboratory, serving as her alternate. The Assistant Director of Project Stormfury is Capt. S. E. Wright, USN, Officer in Charge of the U.S. Fleet Weather Facility, Jacksonville, Fla. His alternate is Commander J. W. Kidd, USN.

The silver iodide generators used in Project Stormfury were developed at the Naval Ordnance Test Station, China Lake, Calif., under the direction of Dr. Pierre Saint Amand. These unique generators permit the seeding of a large area of a supercooled cloud tower—suddenly, massively, and simultaneously.

A Project Stormfury Advisory Panel, consisting of prominent university scientists, provides expert advice to Project officials on all scientific aspects of the program. Present members of the Panel are Dr. Noel E. LaSeur, Panel Chairman, Florida State University; Dr. Roscoe R. Braham, Jr., University of Chicago; Dr. Edward Lorenz, Massachusetts Institute of Technology; Dr. Daniel F. Rex, National Center for Atmospheric Research; and Dr. Charles L. Jordan, Florida State University. ■

## **Aviation Weather Services Agreement Signed**

A formal agreement was completed August 3 prescribing the responsibilities of the Environmental Science Services Administration (U.S. Department of Commerce) and the Federal Aviation Agency in providing aviation weather services and meteorological communications. The memorandum of agreement was signed by Secretary of Commerce John T. Connor and FAA Administrator William F. McKee.

For the most part, the agreement confirms existing working arrangements between the Weather Bureau (ESSA) and the FAA. The Weather Bureau will continue to prepare forecasts, warnings, and advisories for aviation. As it has in the past,

the Bureau will establish meteorological standards for aviation weather service and will conduct quality control programs to ensure that these standards are maintained.

The new agreement also incorporates certain changes in agency responsibilities, designed to promote efficient use of manpower and other resources in both agencies. The Federal Aviation Agency will determine the annual requirements for aviation weather services and will present and justify these requirements to the Secretary of Commerce by the first of February each year for inclusion in the annual service plans.

In addition, the FAA will begin in Fiscal Year 1967 to fund and operate certain weather facilities and equipment which serve only aviation needs. Equipment for measuring and computing runway visibility will be purchased, operated, and maintained by the FAA.

The Federal Aviation Agency will assume the responsibility for distribution, display, and presentation of aviation weather information as part of the National Airspace System. This will include routine pilot weather briefing not requiring professional meteorological assistance, distribution of weather information within the Air Traffic Control System, and the delivery of weather information to the pilot and operator through appropriate transmission facilities.

## The FAA Academy's Weather Classroom

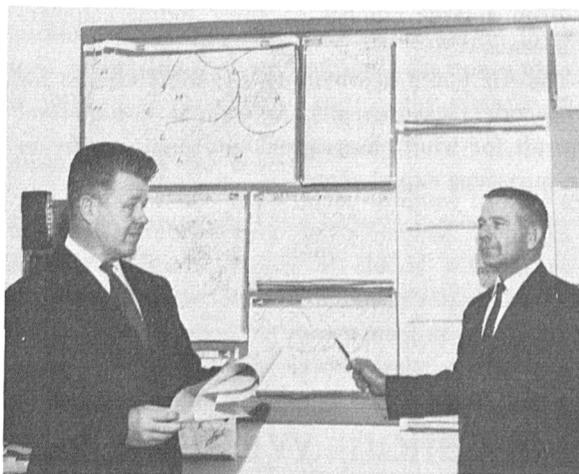
Tucked away in an FAA hangar on the flight line of Will Rogers World Airport at Oklahoma City is one of the Weather Bureau's unique installations—a two-man aviation meteorological instructional unit. Functioning as part of the Flight Standards Training Division of the Federal Aviation Agency Academy, this unit is manned by Robert C. French and Bruce M. Aikins, both aviation meteorological instructors who are members of the Weather Bureau Coordinator's staff of the FAA Academy. The Academy is part of the FAA Aeronautical Center at Oklahoma City, providing advanced training for many FAA specialists.

As Weather Bureau instructors at the Academy, Messrs. Aikins and French prepare and present specialized weather lectures and lead discussions on subjects ranging from methods of self-briefing to high-altitude meteorology. Their "students" are inspectors for the FAA Flight Standards Service, a group of professional Government pilots who return from the field periodically for refresher training.

Much of the meteorological instruction is given in the model flight forecast and briefing office, a weather support center operated by the Weather

The Weather Bureau will continue to be responsible for display and presentation of aviation weather information in its own facilities and for professional meteorological advice to the pilot.

In the area of research and development, the arrangement provides that future aviation weather R & D programs related to forecasting and sensing the atmosphere will be the responsibility of the Environmental Science Services Administration, while R & D related to distribution, display, and presentation will be the responsibility of the Federal Aviation Agency. However, if the FAA has a need for meteorological research and development that is not included in the ESSA budget, the FAA may arrange for ESSA to conduct the study on a reimbursable basis. ■

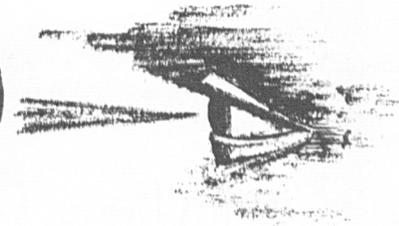


Bruce M. Aikins (left) and Robert C. French prepare a briefing for one of their classes at the FAA Academy weather unit.

Bureau unit for extensive flight operations at the Aeronautical Center and at the Academy.

Mr. Aikins, a former Navy meteorologist, joined the Weather Bureau in 1961 and has been on the Weather Bureau staff at the Academy since 1964. Mr. French was a pilot and meteorologist with the Air Force and is still an active weather officer in the Air Force Reserves. A television weatherman before joining the Bureau at WBAS Oklahoma City in 1955, Mr. French has been at the FAA flight forecast office since its establishment. ■

# WMO EXECUTIVE COMMITTEE MEETS IN GENEVA



Formation of the World Weather Watch was a major topic of discussion at the seventeenth session of the World Meteorological Organization's Executive Committee, held in Geneva from May 27 to June 11. The Committee approved Melbourne as the site for the third World Weather Center (the others are at Washington and Moscow) and examined various aspects of the projected World Weather Watch. Final plans for the Watch are scheduled for presentation to the Fifth WMO Congress in April 1967.

Weather Bureau officials attending the recent Executive Committee session were Dr. White, a member of the Committee; Nels E. Johnson, alternate for Dr. White; and Merritt Techter and G. D. Cartwright, advisors. In addition, Dr. Sigmund Fritz gave a lecture on the applications of satellite data to meteorological problems (in collaboration with Dr. I. Vetlov, a Soviet scientist), and Dr. Edwin Kessler spoke on the applications of radar to the measurement of areal rainfall (in collaboration with Dr. Chernikov of the Soviet Union).

The Executive Committee approved plans for a "backbone" telecommunications system for the World Weather Watch, an around-the-world circuit which will link the World Weather Centers with regional communication centers in Tokyo, Brasilia, New Delhi, Nairobi, and Offenbach. These regional centers will feed raw data into the global system and assist in the distribution of analyzed products. After agreeing on several engineering principles for the communications design, the Executive Committee urged WMO Members to undertake studies of new technology which would forward the establishment of this worldwide communications system. The new "backbone" plan supersedes the previous concept of a weather communications system which would connect two Northern-Southern Hemispheric loops.

In another action, the Executive Committee approved the decisions of the WMO Panel for the New Development Fund and authorized several new minor projects in the improvement of existing stations. (See TOPICS, January/February 1965, for a report of the Panel's meeting at Geneva in November 1964).

Plans for the International Hydrological Decade, which were prepared by the Commission for Hydro-meteorology, and recommendations of the new Council for the International Hydrological Decade were examined by the Executive Committee and referred to WMO Members for action. As the major WMO program in hydrology for the next ten years, the International Hydrological Decade will feature projects designed to promote closer cooperation of the fields of meteorology and hydrology, especially in certain countries which now have a marked separation of these functions.

Another of the many projects reviewed by the Executive Committee was the WMO technical cooperation program, under which assistance is provided to developing meteorological services through the training of meteorologists and the assignment of expert advisory missions. To date, this program has provided for the training of more than two thousand students and has established five major training centers at Cairo (Egypt), Leopoldville (Congo), Tunis (Tunisia), Lagos (Nigeria), and Casablanca (Morocco).

The International Meteorological Organization prize, awarded yearly by the WMO Executive Committee, was given this year to Dr. Sverre Pettersen, Scientific Attache to the U.S. Embassy in Stockholm. He is the fourth American to be recognized for outstanding work in the field of international meteorology. The others were former Weather Bureau Chief Francis Reichelderfer (1964), Professor Jacob Bjerknæs (1959), and the late Professor C. G. Rossby (1957). ■



## ICY Committees Discuss World Weather Watch

The International Cooperation Year Government and Citizens Committees on Meteorology met at the National Academy of Sciences in Washington, D.C., on June 16 to discuss the United States' participation in international meteorological programs, particularly the World Weather Watch.

To commemorate the 20th anniversary of its founding, the United Nations designated 1965 as International Cooperation Year (ICY). The United States has used the ICY as a period for taking a new policy look at every phase of international cooperation. To conduct this reexamination, 50 specialized Cabinet committees and 30 private committees were established. These groups, including the two committees on meteorology appointed in March 1965, are to present their recommendations to the White House before the end of the year.

Members of the ICY Cabinet Committee on Meteorology are Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology (Chairman); Dr. Robert M. White, Administrator of ESSA; Dr. Richard E. Hallgren, Office of the Assistant Secretary of Commerce for Science and Technology (Coordinator); Dr. Harold Brown, Director of Defense Research and Engineering; Harlan Cleveland, Assistant Secretary of State for International Organization Affairs; Dr. Hugh L. Dryden, Deputy Administrator of the National Aeronautics and Space Administration; and Leland J. Haworth, Director of the National Science Foundation.

Chairman of the Citizens Committee on Meteorology is Dr. Thomas F. Malone, Vice President for Research of the Travelers Insurance Companies. Other members of the Citizens Committee are Dr. Joseph Kaplan, University of California at Los Angeles; Dr. Jule Charney, Massachusetts Institute of Technology; Dr. Ragnar Rollefson, University of Wisconsin; Dr. Robert Kay, Hughes Aircraft

Corporation; and Dr. Joseph B. Koepfli of the California Institute of Technology.

A number of the nation's outstanding scientists and leaders of industry were invited to attend the meeting on June 16 to provide expert advice to the committee members.

The committees and invited guests were welcomed by Dr. Malone and addressed by Assistant Secretary Hollomon, who called the proposed World Weather Watch a "major new initiative of great significance." The World Weather Watch, Dr. Hollomon said, could lead to improvements in meteorology, in forecasting, and eventually climate control.

Dr. White discussed the functions, operations, and problems of national weather services. He outlined plans for the World Weather Watch, "a comprehensive system for observing, communicating, and processing global weather information," using the latest technological developments including space platforms. Since weather satellites are available to few nations, Dr. White said, those nations have an obligation to share the benefits with others.

Dr. Jule Charney, one of the foremost experts on numerical weather prediction, observed that "if we are to talk seriously of prediction for a week or more, we must have global observation. The present Northern Hemisphere network," Dr. Charney said, "is such that it allows predictions up to four days at most." However, in order to determine whether a global observing system would permit appreciable improvement in long-range prediction, he advocated an international observing experiment of about two months' duration.

Assistant Secretary Cleveland highlighted the international questions posed by new technology. In their planning efforts today, he said, meteorologists must consider such problems as whether satellites and free-floating balloons may violate other nations' territorial rights. ■

## NEW INTERN PROGRAM BEGINS

The first class in the Bureau's new Meteorologist Intern Program began orientation June 28 at the Central Office Education and Training Center. The six-month program is designed to provide intensive training for recently graduated meteorologists, introducing them to the Bureau's missions and activities, methods and operations.

The 15 trainees, from all parts of the United States including Hawaii, first were given a series of orientation lectures by officials from the Office of National Meteorological Services. The next scheduled activity was a six-week tour of duty on various shifts at Weather Bureau stations at Washington National Airport and Dulles Airport.

Another six-week period following the station duty consists of classroom-laboratory training in procedures and techniques used in making various types of operational weather forecasts, with special attention given to the application of National Meteorological Center products. Instructor-in-Charge for this course is Lawrence A. Hughes, Regional Meteorologist at Kansas City. There will be various guest instructors, including Silvio Simplicio and Carlos Dunn, both of the New York Regional Office.

For the remainder of the schedule, the trainees will complete six weeks on various shifts at the National Meteorological Center and the National Weather Satellite Center, three weeks of classroom-laboratory instruction in meeting the user's needs for weather information (presented by personnel of the Weather Bureau Coordinator's Office at the FAA Academy, Oklahoma City), and a one-week review of specialized activities (conducted by the Offices of Systems Development, Hydrology, Climatology, Meteorological Research, and Administrative and Technical Services). The final week of the program is devoted to an orientation and "checkout" at the regional office in the area where the intern will be assigned. ■



The 15 trainees in the Meteorologist Intern Program are (standing left to right) Jeanne Karahawa, Louis Coutu, Rogert Quayle, William Lerner, William Collins, Charles Novak, Richard Schwerdt, Clifton Chun, and David Westnedge. Seated (left to right) are Ernest Perfrement, Allen Reynolds, Arthur DeCotiis, Nathaniel Guttman, William Maher, and Robert van Haaren.

## Teaching Machine Used by CO Division

An automated teaching machine at the Central Office Facilities and Maintenance Division has been used successfully in training employees, and the same technique might prove useful in field offices. During the past six months, 22 Division trainees have completed 80 courses with favorable results.

The teaching machine has been employed for programmed instruction courses in basic grammar, punctuation, and writing. In addition, technical and managerial courses are offered in computer programming, basic electronics, Program Evaluation and Review Techniques (PERT), effective executive practices, and effective letter writing. ■

# SOUTHERN HEMISPHERE BALLOON EXPERIMENT

by

*Holmes S. Moore, Head, Space Systems Branch  
TOS Systems Engineering Division  
National Weather Satellite Center*

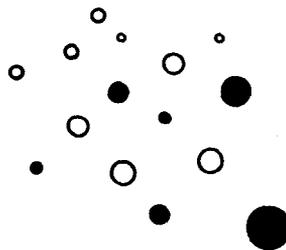
A Southern Hemisphere pilot test of the Global Horizontal Sounding Technique (GHOST) is expected to begin later this year under the joint sponsorship of the Weather Bureau and the National Science Foundation. The test, which has the endorsement of the World Meteorological Organization, will be conducted by the National Center for Atmospheric Research.

As conceived by Vincent E. Lally of the National Center for Atmospheric Research and Lt. Col. Thomas O. Haig of the U.S. Air Force, the Global Horizontal Sounding Technique is a program designed to obtain atmospheric measurements at several levels over the entire surface of the earth. The system envisions the use of one or more satellites which would locate and read out data from large numbers of constant-level balloons.

The GHOST system appears to be a promising concept for eventual use in the World Weather Watch, but considerable test and development work remains to be done before a constant-level balloon program can become operational. The Space Systems Branch of the National Weather Satellite Center is conducting a multi-faceted program in connection with the GHOST system, including development of thin-film batteries and electronics which are non-hazardous to aircraft and investigation of a number of techniques for locating and interrogating the constant-level balloons.

Limited tests of constant-level balloons have been conducted in the past on "transosonde" flights and more recently on flights across the Pacific Ocean during a joint Japan-United States project in April and May 1964.

The upcoming Southern Hemisphere balloon experiment is a primitive version of the GHOST System, designed to test whether small balloons can be built and launched to remain aloft more than a few days. Successful long-lasting flights hold the key to the GHOST program's eventual use.



Other objectives of the Southern Hemisphere experiment are testing of temperature, pressure, over-pressure, humidity, and radiation sensors; determination of the extent of clustering of balloons in particular areas; and collection of data on the gross planetary circulation in the Southern Hemisphere at altitudes of 500, 200, and 30 millibars.

In the test, approximately 100 balloons will be launched from Christchurch, New Zealand, at a rate of no more than one per day for six months. Present plans call for three different sizes of balloons to be flown: 1.5-meter diameter, 750-gram balloons for 500-mb. flights; 2.1-meter, 800-gram balloons for 200-mb. flights; and 4.0 meter, 1000-gram balloons for 30-mb. flights. The electronics package suspended below each balloon will weigh less than 140 grams—10 percent of the weight of conventional radiosonde instruments.

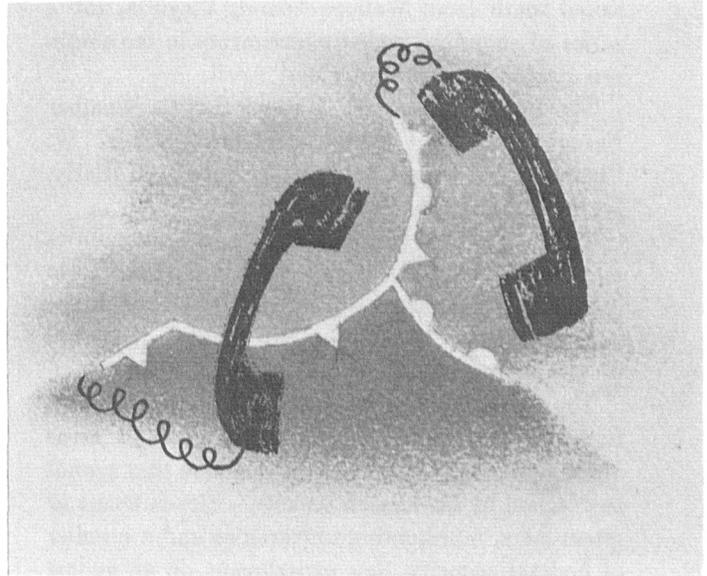
Since a satellite balloon-location and data-collection system is not available for the Southern Hemisphere balloon flights, a simple locating method will be used. Any person equipped with a high-frequency receiver, a stopwatch, and sun tables will be able to locate and position a balloon floating within about 5000 kilometers of the radio receiver. A photosensitive cell, whose resistance is a function of light intensity, is mounted horizontally below the balloon. This cell is the variable element in a resistance-controlled oscillator which generates a Morse code letter identifying the balloon. At the receiver, a stopwatch is used to determine the time required for 10 (or any other fixed number) of transmissions of the letter. A calibration chart is provided which converts this time to sun angle. The sun angle and Greenwich time may then be used to determine a line of position on the surface of the earth. Another reading—at least one hour later—provides a second intersecting line to determine position. Correction for balloon motion can be estimated to improve accuracy.

Accuracy of location by this technique is on the order of 100 to 200 kilometers, based on results obtained during the Pacific flights conducted in 1964. However, by taking frequent observations, a plot can be made of the balloon's sun angle throughout the day. Careful analysis of this curve permits location within 50 kilometers, as well as determination of average winds.

Since the locating method requires the reception throughout the entire Southern Hemisphere of signals transmitted from the balloons, the participation of many nations south of the Equator will be required. Approximately 12 full-time stations will be needed over the hemisphere to ensure adequate coverage. ●

## WE-1212 Totals for 1964

Over 220 million calls were placed to WE-1212 for the latest weather information during 1964. This total is the second highest yearly number. The record high was set in 1963 with 235 million calls. Norfolk, Richmond, and Seattle have weather-call installations but do not keep records.



CITY	ANNUAL TOTAL	HIGHEST DAY	HIGHEST DATE
Detroit	38,449,875	196,620	April 28
New York City	37,540,742	433,372	Jan. 13
Washington	32,146,840	337,831	Jan. 13
Cleveland	30,122,770	195,629	Aug. 11
Chicago	19,633,499	203,765	Aug. 3
Milwaukee	15,993,714	114,214	Dec. 17
Philadelphia	13,028,002	196,620	Jan. 12
Boston	8,443,946	155,816	Feb. 18
Baltimore	7,437,317	104,616	Jan. 13
Pittsburgh	6,422,913	55,946	Jan. 13
San Francisco	5,690,444	90,862	Jan. 20
Los Angeles	5,638,628	72,327	Nov. 16
TOTAL	220,548,690		

# BUREAU MEN CONDUCT EXPERIMENTS

## ABOARD U.S.S. CROATAN

A four-man Weather Bureau team was on board the converted aircraft carrier *Croatan* when she sailed south from Wallops Island, Virginia, for a series of sounding rocket experiments in the southern Pacific during March and April.

The four, all from the Wallops Station Weather Bureau Support Facility, were MIC Lloyd W. Chamberlain, Vesper Boynton, Francis E. M. Early, Jr., and Maurice S. Powell, Jr.

The project was part of the National Aeronautics and Space Administration's sounding rocket program being conducted during the 1964-1965 International Years of the Quiet Sun (IQSY), a period of minimum solar flare and sunspot activity.

The *Croatan* was used as a rocket launching platform for 77 scientific experiments through areas of the upper atmosphere and ionosphere that cannot be reached by land-based rockets. Eleven teams of researchers, representing universities and a number of Federal agencies, flew experiments on an almost daily basis from various points off the west coast of South America.

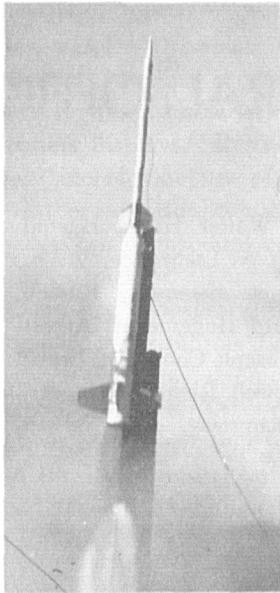
Besides providing routine meteorological measurements, forecasts, and maintenance, the Weather Bureau team was responsible for all meteorological rocket payloads and data reduction. The team also provided ballistic wind calculations and launcher setting for all rocket firings.

During the expedition, routine surface and radiosonde observations were transmitted via NASA communication links to the Bureau's National Meteorological Center in Suitland, Maryland, for retransmission to South American stations via Bureau facilities in Miami.

Experiments on the sea-going expedition were carried aloft aboard solid-fueled Nike-Apache and Nike-Cajun sounding rockets capable of lifting 50-pound payloads to altitudes exceeding 100 miles. In addition, 32 single-stage Arcas and Hasp weather rockets were launched.



U. S. Naval Ship CROATAN



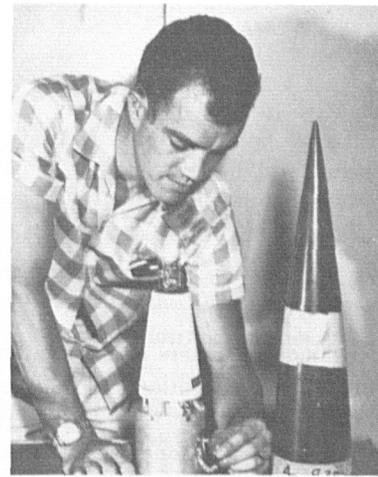
A Nike-Apache rocket photographed at launch

The *Croatan*, one of a class of World War II escort aircraft carriers, is about 500 feet long and 80 feet wide. Normally operated as a cargo ship on worldwide service for the Military Sea Transportation Service, the flattop was furnished and staffed with civil service personnel under contract with the NASA. The launching and tracking equipment on board was operated by a complement of 30 of the NASA's Wallops Station engineers and technicians.

Following loading operations at Baltimore, the *Croatan* spent a few days off Wallops Island for tracking equipment checks. On February 27 the ship sailed for the Panama Canal, and by March 6 she was in the Pacific. The rocket-borne experiments were conducted from about 5° N. to as far as 60° S. (well south of Cape Horn). This route was selected to give scientists the opportunity to conduct space research in the equatorial region and to investigate the "equatorial electrojet," a system of electrical currents circulating in the ionosphere in the region of the magnetic equator.

The ship was opened at Callao (Lima), Peru, on March 31 for visits by South American government officials, scientists, and university professors as well as news media representatives. The visitors were given a tour of the mobile range facility and briefings on the scientific objectives of the expedition. A similar "open house" was held when the *Croatan* docked at Valparaíso, Chile, on April 19. At this

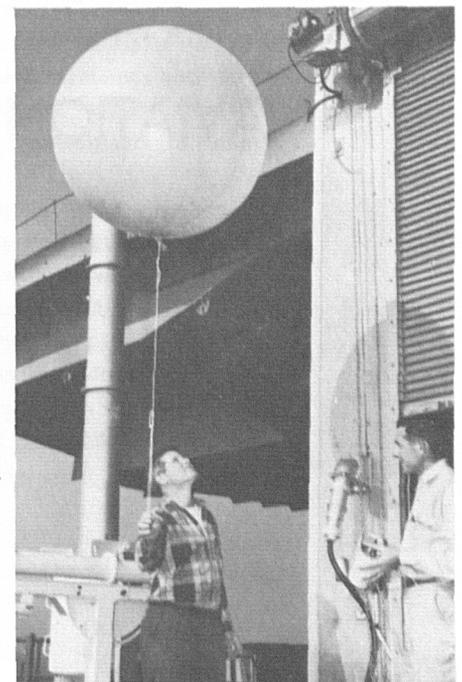
Francis Early, Jr., checks out a meteorological rocketsonde payload.



time, the Weather Bureau team and other researchers debarked and were flown back to the United States. The *Croatan* sailed back to this country for removal of the scientific equipment and return to naval operations.

Little meteorological data has ever been recorded in the eastern Pacific area of the Southern Hemisphere and, while results of the expedition are still under study, some of the information gathered has already proved meteorologically interesting. For instance, near the Equator, a tropopause of -84° C. at 56,000 feet was measured, and easterly winds of over 100 knots were encountered from the Equator to 13° S. near 100,000 feet. In contrast, at 60° S., a tropopause of -58° C. at 30,000 feet was measured by radiosonde, and winds of 285 knots from the west near 200,000 feet were measured via meteorological rockets.

Density, pressure, and temperature were also measured via Nike-Apache rockets at several latitudes and extended the meteorological profile up to about 370,000 feet. Ozone concentration was measured at regular latitude intervals up to near 200,000 feet. ■



Lloyd Chamberlain and Vesper Boynton prepare to release a radar reflective balloon.

# REGIONAL ENGINEERS MEET AT CENTRAL OFFICE

Regional Engineers attended a conference at the Central Office Facilities and Maintenance Division, July 12 through 16. This first Regional Engineers' Conference met to consider improvements in equipment installation and maintenance programs of the National Meteorological Services System.

The need for standardization of both equipment and facilities and their maintenance was stressed by conference participants. They also discussed the hydrologic equipment program, the equipment maintenance reporting system, equipment programs and modification, installation details, cost and budget reports and estimates, hydrogen generating equipment, and the relationship between the Facilities and Maintenance Division and the Regional Office Engineering Branches.

Regional representatives attending the Engineers' conference were Ben Russler, New York; Marvin Black, Honolulu; Richard Baughman, Fort Worth; George Luetkehans, Anchorage; Dominic Conte, Honolulu; Harold Anderson, Kansas City; and Robert Halverson, Salt Lake City.

Participating in the conference from the Central Office were Dr. White, Dr. Robert Simpson, Donald

F. Moore, Merritt Techter, Walter Hahn, Harold McBirney, Wayne Staats, N. A. Lieurance, W. E. Hiatt, Ralph Kresge, Bennett Swenson, Russell Hovey, Elza Lorimor, Richard Hagemeyer, Albert Carlin, Herbert Rahmlow, Joseph Cooper, Edward Bisone, Paul Lehr, David Stowell, Richard Wiggers, Ferdinand Zegel, Burton Loveless, and Nathan Stiewig. ■



Pictured at the Regional Engineers' Conference in the front row (left to right) are Messrs. Russler, Black, and Baughman. In the back row are Messrs. Luetkehans, Conte, Anderson, and Halverson.

## AVIATION SERVICES REVIEWED

## FOR INDUSTRY

Aviation industry representatives attended a one-day briefing on aviation weather service operations on June 22 in Washington. Conducted jointly by the Weather Bureau and Federal Aviation Agency, the meeting featured short talks and presentations by Bureau and FAA officials and a panel discussion between Government and industry representatives.

In his opening remarks to the meeting, Dr. White commented on the excellent cooperation of the Weather Bureau and the FAA in providing aviation weather services. He stressed the importance of a strong national meteorological program to benefit both public and specialized interests.

Among Bureau officials participating in the briefing was Dr. Cressman, who described some of the Bureau's weather service plans. Immediate plans call for the installation of six new radar and eight remote displays. Research and development projects include the use of Doppler radar for severe weather detection, digitizing radar output for computer processing, and contouring for storm intensity depiction. The Atmospheric Physics and Chemistry Laboratory, in cooperation with the National Severe Storms Laboratory, is developing a device to display signals from lightning on a radar scope. Another NSSL program involves the use of tower instrumentation to aid in the determination of low-level wind shear (important to the landing and take-off of high-performance aircraft).

In other presentations at the meeting, Dr. R. H. Simpson, ONMS Deputy Director for Operations, gave a review of Weather Bureau programs; J. K. Huntoon, Executive Assistant to the Director of Aviation Weather Affairs, spoke on FAA/WB working arrangements; R. P. James, Supervisor of

the Aviation Section, covered aviation weather services; and T. C. Council, Assistant for Special Projects in the Office of Aviation Weather Affairs, discussed pilot weather briefing.

Director of Aviation Weather Affairs N. A. Lieurance was moderator of the panel discussion between Government and aviation industry officials. Among the topics covered were wind shear, use of weather radar, pilot-to-forecaster service, and slant-range visibility. Dr. Simpson, Mr. James, and A. C. Peterson, ONMS Aviation Weather Services Representative; M. N. Techter, Director of the Systems Development Office; and A. K. Showalter, Manager of the Data Acquisition Division, participated on the panel.

FAA officials taking part at the conference included Deputy Administrator D. D. Thomas, F. J. Howland (Assistant Chief, Plans Division, Air Traffic Service), C. P. Burton (Deputy Director, Air Traffic Service), G. L. Axford (Air Traffic Service), and C. H. Williams (Staff Assistant to the Director, Air Traffic Service). ■

## Climatological Program Held at FSU

Weather Bureau personnel participated in a special climatological program at Florida State University, May 3 to June 18. The program consisted of two formal courses in climatology and a series of special lectures.

Bureau employees presenting lectures included C. K. Vestal, Regional Climatologist at Fort Worth, who spoke on the use of statistics in climatological analysis; Vincent J. Valli, of the Weather Bureau Agricultural Service Office at Tifton, Ga., who discussed biometeorology; D. R. Davis, Weather Bureau Agricultural Service Office at Quincy, Fla., who lectured on agrometeorological problems and conducted a field trip to the North Florida Experiment Station; Ray M. Hinson, Weather Bureau

Office at Lakeland, Fla., who discussed minimum temperature variations during Florida's frost season; Warren O. Johnson, MIC at Lakeland, who spoke on the frost warning system; and Keith Butson, State Climatologist at WBO Gainesville, Fla., who discussed data requirements for climatological analysis.

Participating fulltime in the program were the following Bureau employees: Russell L. Durham, NWRC Asheville; Stanley E. Holbrook, State Climatologist from Oklahoma City; Frank E. Houghton, State Climatologist from Albuquerque, New Mexico; and Gail W. Leber, WBO Lakeland.

Two Weather Bureau scholarship students at Florida State University, Paul M. Moore and George E. Fisher, also participated in the program. ■

# 31 COOPERATIVE OBSERVERS HONORED

Thomas Jefferson and John Campanius Holm awards for 1965 have been given to 31 volunteer weather observers for their outstanding achievement.

In announcing the award winners, Dr. White noted, "These men and women have served the Federal Government for a total of 1146 years, an average of 37 years each. They have made vital contributions to knowledge of our Nation's climate."

Five cooperative observers were selected to receive the Thomas Jefferson Award for unusual and outstanding accomplishments in the field of meteorological observations. They are Richard C. Brigham, Fall River, Mass.; Carlos A. Call, Fort Ross, Calif.; Hugh A. Storer, Alton, Kans.; C. A. Suter, Piedmont, W. Va.; and Gertrude M. Woods, Palmetto, Tenn.

The John Campanius Holm award for continued excellence was given to 25 observers: Lee L. Albert,

Cape Girardeau, Mo.; Howard R. Allard, Willows, Calif.; Richard M. Allen, Bonita, Calif. (posthumous award); Nesbitt H. Bangs, Stockbridge, Mass.; William A. Beckner, Elgin, Ill.; Floyd C. Butel, Overbrook, Kans.; Paul Carlisle, Alpine, Utah; Clyde C. Clark, Caesars Head, S.C.; Felix A. Delatte, Houma, La.; James C. Faris, Catawba, S.C.; Gilman W. Ford, West Burke, Vt.; C. L. Fox, Tipton, Okla.; Ernest E. Gelhaus, Webster, S. Dak.; and Mrs. Thomas Gillaspie, Midland, S. Dak.

Also receiving the Holm award were Charles D. Greenfield, Helena, Mont.; R. G. Hoge, Watertown, Wis.; William Lammie, Roscoe, S. Dak.; Blaine Malone, Lovelaceville, Ky.; Douglas F. Manning, Alexandria Bay, N.Y.; Howe V. Morgan, Sparta, Ill.; Walter C. Rowland, Waupaca, Wis.; William R. Sherman, Hillsdale, Mich.; C. E. Shubert, Parshall, N. Dak.; Carl Hugh Spruill, Williamston, N.C.; Luis G. Veray, Toa Baja, Puerto Rico; and H. A. Willis, McColl, S.C. ■

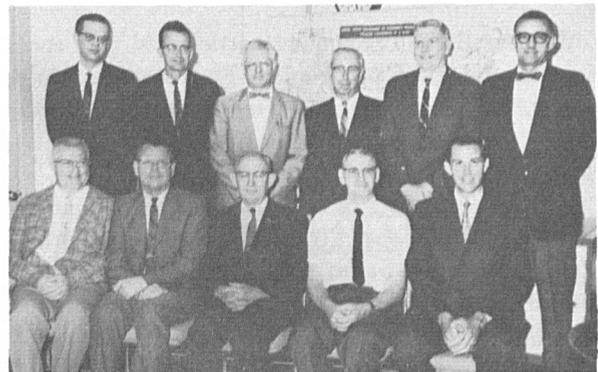
## REGIONAL ELECTRONIC SUPERVISORS DISCUSS PLANS

Technical developments and plans in electronic maintenance program areas were discussed by Regional Electronic Supervisors and Central Office personnel in a meeting at the CO Facilities and Maintenance Division, July 6 through 9.

Among the subjects reviewed at the meeting were organizational changes affecting the maintenance program, the proposed Electronic Computer Reporting System (to be implemented in January 1966), training program requirements, and the relationship of Electronic Technicians to stations and regional offices. In addition, discussion areas included many of the newer equipment items, such as AMOS, RVR, hydrologic equipment, MAMOS, AGMET, and radar.

Field representatives attending the meeting were C. Benjamin Carnahan, Anchorage; Leo Young, Fort Worth; Robert Halverson, Salt Lake City; Drexell Plymale, New York; Lawrence Eide, NMMTC Kansas City; Marvin Black, Honolulu; and John Holstein, Kansas City.

Central Office participants were A. N. Hill, Ronald Hilton, Parke Starke, Philip Dales, Herbert Rahmlow, Russell Hovey, Albert Poulin, Howard Hobart, Thomas Davis, Gilbert Wright, Eugene Beall, Joseph Szokolszky, Otis Payne, H. Yates Holleman, Robert Miller, George Gadea, Gary Snyder, Richard Wiggers, Harold McBirney, Joseph Cooper, and George Littleton. ■



Some of the participants in the Regional Electronic Supervisors' meeting are seen here at the Central Office: (front row, left to right) Messrs. Carnahan, Young, Halverson, Plymale, and Wiggers; (back row, left to right) Messrs. Eide, Black, McBirney, Holstein, Cooper, and Littleton.



*Regional User Services Representative*

Gerald L. Shak, newly appointed Regional User Services Representative, began his Weather Bureau career in 1946 in the International Aviation Overseas Service with a two-year tour of duty in Bermuda. In 1948 he joined the observer-briefing staff at New York International Airport, where he later became Leading Aviation Forecaster in the International Aviation Unit. He was transferred to the New York WBO in 1961 as the Principal Assistant and Supervising Forecaster. For several months prior to his recent assignment as REGUS Representative, he was Acting MIC at the New York Office.

Mr. Shak received a B.S. degree in chemistry from St. Peter's College in New Jersey. He joined the U.S. Army Air Force in 1943 as a Meteorology Cadet and completed training at New York University, where he later returned for graduate study in 1950. A member of the New York Academy of Science and former chairman of the New York Chapter of the American Meteorological Society, Mr. Shak has taught meteorology at the College of the City of New York.

*Quality Control Conference*

A conference of Region I Flight Service Quality Control Officers was held in the New York Regional Office on June 2 and 3. The conference program included discussions of the Quality Control Program and briefings by Regional Office staff members. Quality Control Officers attending the conference included Harold Coleman, WBAS Boston; Joe Turner, WBAS Cleveland; Leonard Olson, WBAS Kennedy Airport; and Sam B. Wyatt, Qual-



Listening to a discussion at the Quality Control Officers' Conference at the New York Regional Office are (left to right) Leonard Olson, Joe Sassman, Sam Wyatt, George Yount, and C. G. Knudson.

ity Control Supervisor at the Central Office. Other Weather Bureau personnel attending the conference were P. B. Stewart, Washington National Airport; Stan Lacy, Aviation Section of the Central Office; and Joe Sassman, Fort Worth Regional Office. The program was organized and moderated by George A. Yount, New York Regional Office.

*NYRO Holds Seminar For Field Forecasters*

A seminar for field forecasters to discuss analysis and forecasting procedures was held by the New York Regional Office Scientific Services Division, June 14 to 16. Some 21 forecasters exchanged ideas with regional personnel and attended lectures and laboratory exercises in the uses of NMC guidance material and in the analysis and forecasting of sub-synoptic scale phenomena. Guest lecturers from the Central Office were Dr. W. H. Klein, Director of Techniques Development Laboratory, and C. Roberts, Head, Technical Procedures Branch.

Field forecasters who attended the seminar included William Constantakes, Albany; Earnest Rodney, Asheville; Lester Levy, Baltimore; Charles Pierce, Boston; Richard Rausch and Carl Webber, Buffalo; Edward Paquet, Charleston, S.C.; John Burke, Cincinnati; Robert Bowes, Cleveland; Robert Carpenter, Columbia, S.C.; Floyd Pate, Greensboro, N.C.; George Schielein, Hartford; Joseph Harrison, WBO New York; Thomas Morgan, JFK New York; Joseph Leedom, Philadelphia; Vincent

Gargaro, Pittsburgh; George W. Sykes, Portland; James N. Hosey, Raleigh; Roy Vickery, Richmond; John Quinlan, Wilmington; and Eugene Hoover, Washington.



*Head, Administration*

Samuel Smith, Head of the Administration Branch in the New York Regional Office, joined the Weather Bureau at New York City as a Minor Observer in 1931. In 1943, he transferred from WBAS La Guardia to the then newly organized New York Regional Office, where he has advanced steadily to his current assignment. He was awarded a Silver Medal for Meritorious Service in 1961.



*Supervisor, Personnel*

K. C. Kraft, the Regional Personnel Officer at New York, entered the Weather Bureau in 1961. Prior to his present assignment, he was the Bureau's College Recruiting Coordinator at the Central Office.

After three years of military service in the Navy during World War II, Mr. Kraft entered the State University of Iowa, where he received a bachelor's degree in business administration in 1950. He began his Federal civilian service as a cartographic aid with the Army Map Service. During the past 12 years, he has specialized in various areas of personnel administration while employed by the Army, the Navy, and the Coast Guard. He is a member of the Society for Personnel Administration and the Public Personnel Association.



*Supervisor, Procurement and Property*

Dominic J. Gaudioso, Supervisor of the Procurement and Property Management Section in the New York Regional Office, has been with the Weather Bureau since 1938. After working five years in the Central Office, he was transferred to the New York Regional Office in 1943. In 1946, Mr. Gaudioso was detailed to the Central Office Instrument Division to assist in the Philippine Rehabilitation Program and the supply logistics for Field Regional Depots.

Before joining the Weather Bureau, he attended both New York University and Nassau College. A former New York National Guardsman, Mr. Gaudioso served in the Air Force Reserve at the end of World War II. He is a charter member of the New York Federal Procurement Officers Association.



*Supervisor, Fiscal Section*

The Supervisor of the Fiscal Section in the New York Regional Office, William Amkraut, joined the Weather Bureau at Washington in 1939 after four years of prior service in the Department of Agriculture. Mr. Amkraut graduated from Southeastern University in 1941 with a bachelor's degree in accounting and received his LL.B. degree in 1943. During World War II, he served in the Army Field Artillery for three years before returning to the Weather Bureau at the New York Regional Office in 1946.

During the past eight years, Mr. Amkraut undertook a special project studying electronic data processing machines for small office use. His efforts in this project resulted in the installation of an electronic accounting machine in the New York Fiscal Section.



Four Weather Bureau employees currently located at Boston received Antarctic Service Medals. Oscar Tenenbaum (right), MIC at WBAS Boston, presented the medals on behalf of Dr. White to (second from left to right) Thomas Holmes, Raymond W. Mosher, and James E. McCarthy. Another medal recipient, William E. Muldoon, is not pictured. George L. Poole (left), Atlantic Weather Patrol Supervisor, looks on.

## NEWS from Region II



### Supervisor, Personnel

The Personnel Supervisor in the Fort Worth Regional Office, Edward F. Cook, joined the Weather Bureau at the Central Office in 1940. He later served as the first Personnel Supervisor in the former Atlanta Regional Office and worked at the National Weather Records Center in Asheville. He has been a Personnel Officer at Fort Worth since 1956. Mr. Cook attended Texas Christian University.

### Weather Bureau Beauty

Not all the interesting curves at the Weather Bureau Office on Grand Cayman Island are found on charts. Even more attractive curves are possessed by Miss Helen Thompson, a Weather Bureau employee on Grand Cayman Island, West Indies, who was crowned "Miss Cayman" last March.

The 19-year-old beauty was eligible to participate in the "Miss Universe" Contest but was unable to make the trip to Miami. A 17-day vacation in Jamaica was part of her prize.



### Supervisor, Procurement and Supply

Charles J. Raven, Supervisor of the Procurement and Supply Section of the Fort Worth Regional Office, began his Weather Bureau career in 1929 at Groesbeck, Tex. His later assignments have taken him to Cheyenne, Wyo.; El Paso and Corpus Christi, Tex.; and New Orleans. In addition to supervising the Procurement and Supply Section, Mr. Raven is also the Acting Head of the Administrative Branch at Fort Worth. Mr. Raven has attended both Loyola University and Texas Christian University.



## NEWS from Region III



### *Supervisor, Procurement and Supply*

Howard D. Wilson, Procurement and Supply Supervisor at Kansas City, has served in his present position since 1946. He joined the Weather Bureau in 1929 at the Central Office, where he was assigned to the Supply Division until his transfer to Kansas City.

A veteran of World War II, Mr. Wilson attended Springfield (Mo.) Business College.



### *Supervisor, Personnel*

George B. Scott, Supervisor of Personnel at Kansas City, entered the Weather Bureau in 1941 at Port Arthur, Tex., as a Junior Observer. After serving at several Bureau stations in Texas, he was transferred to New Orleans to help develop the weather data processing procedure. Following this assignment, he was in charge of the Weather Records Processing Center at Seattle and next worked on an air pollution study at the Office of Climatology in Washington before coming to his present position.

Prior to joining the Weather Bureau, Mr. Scott taught mathematics and physics at Kansas high schools. A member of Sigma Pi Sigma and Delta Epsilon, he holds B.S. and M.S. degrees from Kansas State College.

## NEWS from Region IV



### *Regional Meteorologist*

The new Regional Meteorologist at Salt Lake City, Leonard W. Snellman, joined the Weather Bureau in 1946 and served as a forecaster at the Chicago Forecast Center until 1951. From 1953 until his current assignment, he was a Technical Consultant with the Scientific Services Division of Headquarters, Air Weather Service, at Scott Air Force Base.

Before entering the Weather Bureau, Mr. Snellman was a Weather Officer in the U.S. Army Air Force from 1942 to 1946. In 1951, he was recalled to active duty during the Korean conflict and served as a Weather Officer in the Air Weather Service, European Weather Central, in London until 1953.

A graduate of Kenyon College, Mr. Snellman received his master's degree from the University of Chicago in 1951 and currently is completing work for his Ph.D. degree in geophysics at St. Louis University. The author of several articles in the AMS Bulletin, he is a professional member of the American Meteorological Society and present Chairman of the AMS Board on Professional Ethics.

### *Assistant Regional Meteorologist*

Edward D. Diemer, the new Assistant Regional Meteorologist for Techniques Evaluation at Salt Lake City, was previously Aviation Forecaster at WBAS St. Louis. Before joining the Weather Bureau at St. Louis in 1959, Mr. Diemer was an



Air Force officer in the Air Weather Service and in the Air Training Command at Chanute Air Force Base.

Mr. Diemer received both B.S. and M.S. degrees in geophysical engineering at St. Louis University, where he just recently received his Ph.D. in meteorology. During the past year, he studied at M.I.T. under a Weather Bureau scholarship. He is a member of the American Meteorological Society, the American Geophysical Union, Pi Mu Epsilon and Sigma Xi societies.



*Public Service Operations Meteorologist*

The new Public Service Operations Meteorologist at Salt Lake City is A. Larry Zimmerman. After serving in the U.S. Air Force from 1941 until 1945, Mr. Zimmerman joined the Bureau as a Meteorological Aid in 1946 at Missoula, Mont. After receiving a B.A. degree in mathematics from Montana State University in 1949, he attended the University of Chicago to study meteorology under a Weather Bureau scholarship, during 1951 and 1952. Since that time he has been a hydrologist-meteorologist at Portland, Oreg., and Sacramento, Calif. His most recent position was Advisory Agricultural Meteorologist for Oregon.

He is a professional member of the American Meteorological Society.



*Western Fire-Weather Coordinator*

Wilburt R. Krumm, Western Fire-Weather Coordinator at the Salt Lake City Regional Office, entered the Weather Bureau in 1932 as an Observer at Medford. Later he was a Chartman in the Central Office Map Room until 1938, when he became a Fire-Weather Meteorologist at Mt. Shasta. He was the Supervising Fire-Weather Meteorologist at Boise for three years and in 1943 became MIC at WBAS Missoula, where he served until he was appointed Western Fire-Weather Coordinator in 1960.

Mr. Krumm attended the University of Missouri and took special meteorology training at Oregon State College in 1962. A professional member of the American Meteorological Society, the Western Forestry and Conservation Association, and the Fire Research Councils of seven western states, he has published several articles in the *AMS Bulletin*.

**NEWS** from Region V

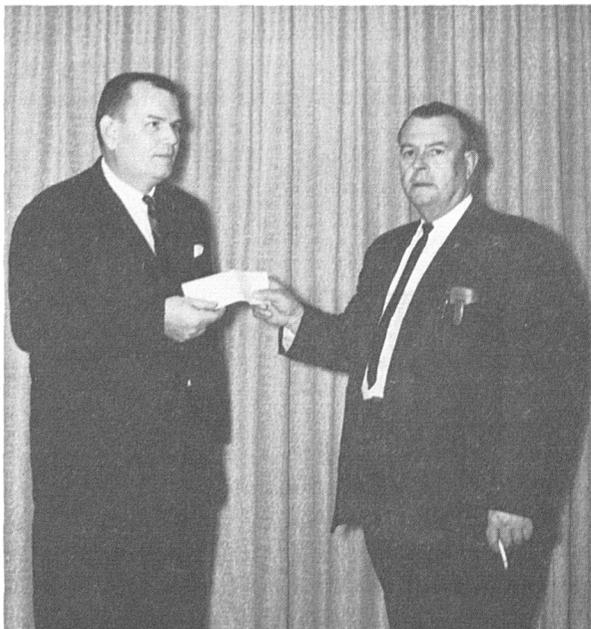
*Yakutat Employees Aid Ship In Distress*

Employees at WBAS Yakutat, Alaska, who operate Radio Station KRU-55 played an important role in the recovery of a drifting barge caught in a gale which swept the Gulf of Alaska. On May 7, second day of the radio station's operation, the Yakutat personnel received a distress message from the skipper of the tug "Limpiar," who said that the tow cable had parted from his barge in rough weather. The Bureau employees forwarded the distress call to the Coast Guard Cutter "Sorrell" and continued to relay messages until the rescue mission was completed successfully.

Under a recent agreement with the Puget Sound Tug and Barge Company, the Yakutat WBAS operates Radio Station KRU-55 to improve the delivery of marine forecasts and weather reports to all vessels on the Gulf of Alaska.

#### *Anchorage Expands Teletypewriter Service*

The Anchorage Regional Office, in cooperation with the Federal Aviation Agency, expanded its weather broadcasts to smaller Alaskan communities beginning May 1 through the use of two off-airways teletypewriter collection loops. One connects Juneau with second-order stations in southeastern Alaska, while a second loop connects second-order stations in south central Alaska with Anchorage. The Defense Communications Agency has provided additional circuitry combining these two networks to provide a channel for the distribution of public service material to the smaller Alaskan towns. The new loops distribute information from the Anchorage Forecast Center, including aviation sequences, marine forecasts for the Gulf of Alaska, and forecasts for local Alaskan communities.



Frederick H. Day, TIC, WBAS Cold Bay, Alaska, receives a check for \$350, a group award for "sustained high performance as indicated by the average termination height of 34,262 meters achieved by the Cold Bay group, which exceeded all other roab stations in the nation for 1964." Mac A. Emerson made the award during the MIC conference at Anchorage, April 22 to 23.

#### *Annette Station Begins New Forecast Program.*

Station staff at Annette began issuing their terminal forecasts on June 1. This program was instituted in order to equalize the workload among meteorologists in Alaska and also to utilize the knowledge of local terrain and other weather factors best known by the personnel at Annette.



Antarctic Service Medals were awarded to four Weather Bureau employees in the Anchorage Region. Mac A. Emerson, Regional Director, presented the medals to (left to right) David L. Yingling, Roger P. Mallory, Jr., Travis L. Baker, Jr., and Dawaine A. Shoemaker.

## NEWS from Region VI

#### *WBAS Honolulu Assists Spaceflight Meteorology Group*

Weather Bureau personnel at WBAS Honolulu continue to assist the Spaceflight Meteorology Group in providing Pacific weather information for NASA's manned spaceflights. Beginning with the last two Mercury flights and continuing with the current Gemini series, forecasts have been issued for possible landing areas in the Pacific. For the first Gemini flights, landings have not been scheduled for the Pacific Ocean but there are important secondary landing areas north of the Hawaiian Islands and south of Japan which might be used in an emergency situation or in the event of unfavorable weather at the primary site.

During the four days of the Gemini 4 flight (with astronaut McDivitt and White), Arthur Pierson, Clarence Lee, and others on the WBAS Honolulu staff provided 24-hour service to the Spaceflight Meteorology Group. O. A. Gorden, Jr., of the Spaceflight Meteorology Group's Miami Section, was on detail to Honolulu during the Gemini flights to serve as liaison between WBAS Honolulu and the Meteorology Group.

*Head, Data Acquisition Branch*

John P. Lee, the Head of the Data Acquisition Branch at the Honolulu Regional Office, brings to his position a wide variety of experience. After joining the Bureau as an observer at WBAS Miami in 1949, he served at Memphis as an observer-briefer, at Isachsen, N.W.T., as an executive officer, at Macon as a forecaster, and at WBO Miami as a radio meteorologist. He was an upper-air specialist in the Pacific in 1963 and became Supervisor of the Observations Section at the Honolulu Regional Office in 1964. He assumed his current duties last April.



A professional member of the American Meteorological Society, Mr. Lee has a B.A. degree from the University of Miami and an M.A. degree from Memphis State University. He served in the U.S. Marine Corps during World War II and currently is an officer in the Air Force Reserve.



Col. Robert E. Belville (left), representing the Department of Defense, pins the Antarctic Medal on Franklin T. Shibuya, WBAS Johnston Island, at an informal award ceremony.

*Weather Bureau Employees "Go Native"  
As Quake Strikes Yap*

In days past, natives on the island of Yap believed there was another world underneath their island—a world inhabited by underground spirits who caused earthquakes by trying to rise to the surface world. The Yapese believed that they could frighten away the "underground spirits" by shouting wildly during an earthquake.

A small quake struck Yap on June 14, causing great excitement. No physical damage was reported, but the natives did follow their ancient custom of shouting wildly at the "spirits" causing the quake. But, according to informed sources on the island, not all the shouting was Yapese—also seen "Yapping" were employees of the U.S. Weather Bureau Station on the island!

# Retirements

## **GLENN C. BERANEK,**

a Meteorologist at the Weather Bureau Airport Station in Pittsburgh, retired July 23 after 12 years of service with the Weather Bureau. He graduated from Pennsylvania State College with a degree in meteorology, and has attended the Department of Agriculture Graduate School. Mr. Beranek entered the Weather Bureau in 1953 in the Extended Forecast Section of the Central Office and has served at Anchorage, Alaska; the National Meteorological Center at Suitland, Md.; and Harrisburg, Pa. Mr. Beranek's address is R.D. #2, Pauls Heights, Mt. Pleasant, Pa.

## **FRANK J. NELSON,**

a Meteorological Technician at the Los Angeles Weather Bureau Airport Station, retired July 31, completing 26 years of Weather Bureau service. Mr. Nelson received a B.A. degree from Gustavus Adolphus College and an M.A. degree from the University of Arizona, before joining the Weather Bureau in 1939 as a Junior Observer at Rapid City, S.D. He served three years at Rock Springs, Wyo., until moving to Los Angeles in 1943, where he spent the remainder of his career. Mr. Nelson resides at 5842 Watcher St., Bell Gardens, Calif.

## **ROBERT G. HILL,**

a Meteorological Technician for the past 13 years at the Weather Bureau Airport Station in Reno, Nev., retired July 8 after 28 years of Weather Bureau service. He attended the U.S. Military Academy at West Point and worked in the U.S. War Department before entering the Weather Bureau in 1937 as a Junior Observer at Missoula, Mont. Mr. Hill also served at Pocatello, Idaho; Ketchikan, Alaska; Boston; Seattle; San Francisco; and Wake Island. Mr. Hill's address is 394 Cuesta Drive, Los Altos, Calif.

## **JACK C. THOMPSON,**

Associate Regional Meteorologist at the Weather Bureau Airport Station in San Francisco, retired July 31 after more than 36 years of Weather Bureau service. Joining the Bureau in 1929, he served as an observer, forecaster, and research forecaster at various California stations before coming to the Central Office as a research meteorologist in 1950. In 1953, he transferred to Los Angeles as MIC, returning to the Central Office in 1955. Before his move to San Francisco last year, Mr. Thompson was head of the Office of Planning. Awarded a Department of Commerce Silver Medal for Meritorious Service in 1955, he has a B.A. degree from U.C.L.A. and has done graduate work at Scripps Institution of Oceanography, American University, and Indiana University. Mr. Thompson is a member of the American Meteorological Society, Sigma Xi, and the American Geophysical Union. He resides at 1262 Oak Grove Avenue, Burlingame, Calif.

## **WALTER A. JACKSON,**

a Supervisory Procurement Agent in the Administrative Operations Division at the Central Office, retired June 18 after serving the Weather Bureau for more than 36 years. Mr. Jackson joined the Weather Bureau in 1928 as a Junior Messenger and spent his entire career with the Bureau at the Central Office. He attended the Department of Agriculture Graduate School. Mr. Jackson resides at 3717 Warren St., N.W., Washington, D.C.

## **SHIRLEY F. HERMAN,**

a Secretary in the Executive Office at the Central Office, retired July 8 after completing 32 years of Government service. The daughter of the late Walter Moxon, Regional Administrative Officer at the New York Regional Office, Mrs. Herman was a secretary in the U.S. Veterans' Administration for 11 years before entering the Weather Bureau in 1943. Her Bureau service has been entirely at the Central Office. Mrs. Herman resides at 13251 Venetian Road, Silver Spring, Md.

## **MARIE K. O'NEILL,**

a Clerk in the Facilities and Maintenance Division at the Central Office, retired June 5 after 21 years of Government service. Before joining the Weather Bureau, Miss O'Neill was employed by the U.S. Maritime Commission, the Reconstruction Finance Corporation, and the National Bureau of Standards. Her service in the Weather Bureau began in 1950 at the Central Office, where she worked as a Clerk in the Instrument Division. Miss O'Neill's address is 5505 Landis Ave., Sea Isle City, N.J.

## **EDWARD A. ("Ike") FARRELL, JR.,**

a Meteorologist in Charge of the Weather Bureau Airport Station at Houston, retired July 9 after serving in the Weather Bureau for over 45 years. Mr. Farrell entered the Bureau in 1919 as a Messenger Boy, but soon became an Assistant Observer. With the exception of a three-year period spent in New Orleans, Mr. Farrell has served his Weather Bureau career in Houston. He has studied mathematics at Houston Junior College. Mr. Farrell's address is 2209 Huldy Street, Houston, Tex.

## **JOSEPH J. V. DOBRY,**

a Meteorological Technician at the Weather Bureau Airport Station at Key West, Fla., retired July 3 after 35 years of Weather Bureau service. Before beginning his Weather Bureau career, Mr. Dobry attended St. Procopius College, Central State (Okla.) Teachers College, and Loyola University of the South. He entered the Bureau in 1930 as a Junior Observer at Oklahoma City and soon transferred to New Orleans, where he worked for 17 years. In 1947, Mr. Dobry moved to WBAS Wichita Falls, Tex., where he worked until 1964. His address is 1716 Lucile St., Wichita Falls, Tex.

**JUNE E. BRICE,**

a Voucher Examining and Accounting Clerk at the Regional Office in Salt Lake City, retired June 20, completing 31 years of Government service. After attending Alaska University, Miss Brice worked in the Department of Agriculture for four years. She began her Weather Bureau career in 1937 in the Central Office and later served six years in Seattle, Wash., before transferring to Salt Lake City. Miss Brice's address is 16357 S.E. Salmon St., Portland, Oreg.

**GLADYS C. WILSON,**

a Secretary at the Weather Bureau Airport Station in Jacksonville, Fla., retired July 19 after more than 22 years of Government service. Miss Wilson worked as a secretary in the War Department from 1942 until 1944, when she transferred to the Office of Price Administration. In 1947, she joined the Weather Bureau at Jacksonville, where she served until her retirement. Miss Wilson resides at 2805 Silver Street, Apartment #1, Jacksonville, Fla.

**CURTIS M. EGGERS,**

a Meteorological Technician at the Las Vegas Weather Bureau Airport Station, retired July 17 after serving the Weather Bureau for 35 years. Before joining the Bureau, he attended Southwest Missouri State College, and later studied at Oklahoma City University and Pennsylvania State University. Mr. Eggers began his Weather Bureau career in 1930 as a Junior Observer at Meridian, Miss. Subsequent assignments took him to Jackson, Miss.; St. Louis, Oklahoma City, Phoenix, San Francisco, Los Angeles, Oakland, and Las Vegas, where he worked since 1945. Mr. Eggers lives at 1324 S. 13th Street, Las Vegas, Nev.

**JOHN C. BUCHANAN,**

Meteorological Technician at the Weather Bureau Airport Station at Lake Charles, La., retired July 21 after 26 years of Government service. After serving in the Navy weather service since 1939, Mr. Buchanan joined the Weather Bureau in 1945 as a Meteorological Aid at Pocatello, Idaho, and was transferred to Lake Charles in 1956, where he served until his retirement. Mr. Buchanan studied meteorology at Pennsylvania State University. He resides at 1805 14th Street, Lake Charles, La.

**GEORGE A. JOHNSON,**

a Meteorologist at the Weather Bureau Airport Station at Baltimore's Friendship Airport, retired July 3 after 32 years of Weather Bureau service. Mr. Johnson joined the Weather Bureau in 1931 as a Junior Observer at Philadelphia and later served at Jacksonville, Fla. Since 1937, he has worked at Airport Stations in Baltimore. While stationed in Baltimore, he attended Johns Hopkins University. Mr. Johnson's address is 2812 Rosalie Ave., Baltimore, Md.

**ALFRED H. GEDDES,**

a Supervisory Meteorological Technician at the Weather Bureau Airport Station at Nantucket, Mass., retired July 20, completing more than 21 years of Government service. After serving in the U.S. Army as a weather observer from 1942 to 1945, Mr. Geddes joined the Weather Bureau in 1947 as a Meteorological Aid at Albany, N.Y. In 1948 he was transferred to Nantucket, where he served until his retirement, most recently as Technician-in-Charge. Mr. Geddes attended Lowell Institute and Pennsylvania State University. He resides at 11 Lily Street, Nantucket, Mass.

## Length of Service Awards

### REGION I

**35-YEAR AWARDS**

Ralph W. Carey  
WBO Cincinnati  
Clayton L. Rock  
WBAS Harrisburg, Pa.  
Richard L. Sharpston  
WBAS Charleston, W. Va.

**25-YEAR AWARDS**

Robert K. Fankhauser  
WBAS Charleston, W. Va.  
Lucy M. Gunter  
RO New York  
Charles D. Hopkins, Jr.  
RFC Hartford  
Marvin L. Kemp  
WBAS Wilmington, N.C.

**20-YEAR AWARDS**

George Berger  
WBAS New York  
Gordon F. Driskell  
WBAS Portland, Me.  
Anne M. Elder  
WBAS Wilmington, N.C.  
Thomas E. Hostrander  
WBAS Baltimore  
George A. Mikulan  
WBAS New York  
Frank Pecoraro  
RO New York  
Julius A. Rudy  
WBAS Newark  
Joseph F. Valenti  
RO New York

**15-YEAR AWARD**

Dan Elliott  
WBAS Cincinnati

## REGION II

### 45-YEAR AWARD

Joseph W. Evans  
WBAS Augusta

### 35-YEAR AWARDS

Cecil E. Carney  
WBAS Memphis  
Rollo H. Dean  
WBO Lakeland, Fla.  
Eldred O. Mox  
WBAS Albuquerque  
Leonard G. Pardue, Jr.  
NHC Miami  
Ernest Roger III  
NHC Miami  
Harold A. Smith  
RO Fort Worth  
Lewis F. Thomas  
WBAS Atlanta  
William L. Tilson  
WBAS Mobile

### 30-YEAR AWARDS

Thomas L. Cassell  
WBAS Austin  
William G. Porvaznik  
WBAS Tampa  
25-YEAR AWARDS  
Edgar C. Camick  
WBAS Tampa  
Marion B. Gregory  
WBAS Lubbock  
Carl W. Landers  
WBAS Little Rock  
John F. Leach  
WBAS Laredo, Tex.  
Ned H. Williams  
WBAS Mobile

### 20-YEAR AWARDS

Charles E. Clendaniel, Jr.  
WBAS Houston  
James C. Fidler  
WBAS Austin  
John D. Jefferson  
WBO Swan Island  
Herman M. Rowland  
WBAS Amarillo, Tex.  
Clyde L. Slay  
WBAS Jackson  
Jean M. Weinbrecht  
WBAS Savannah

### 15-YEAR AWARDS

William O. Craig  
WBAS Mobile  
Herbert H. DeGroot  
WBAS Macon, Ga.  
Norris B. Lindley  
WBAS Mobile  
Donald R. Mascarenas  
WBAS Del Rio, Tex.  
Lloyd M. Spyres  
WBAS Tulsa

## REGION III

### 35-YEAR AWARD

Verne Alexander  
RO Kansas City  
30-YEAR AWARD  
George D. Taylor  
WBAS Louisville

### 25-YEAR AWARDS

Keith R. Leatherwood  
WBAS Denver  
Robert W. Nicholson  
WBAS Minneapolis  
Robert W. Ruffle  
WBAS Omaha  
Leo Leslie Stearn  
WBAS Waterloo, Iowa  
Richard H. Volz  
WBAS Denver

### 20-YEAR AWARDS

Robert J. Babb  
WBAS Rochester, Minn.  
Robert L. Bolin  
WBAS Milwaukee  
Paul E. Hammett, Jr.  
RO Kansas City  
Joseph F. Jenicek  
WBAS Evansville, Ind.  
Helen J. Renwick  
WBAS Bismarck, N.D.  
Louis W. Slaybaugh  
WBAS Norfolk, Nebr.  
Robert J. Theisen  
RFC Kansas City

## REGION IV

### 35-YEAR AWARDS

Jean A. Brown  
WBAS San Francisco  
Curtis M. Eggers  
WBAS Las Vegas  
Harry B. Hansen  
WBO Pomona  
Harold C. Harvey  
WBAS Boise  
Kurt M. Muerdter  
WBAS San Diego  
Charles F. Penfield  
WBAS Los Angeles  
Joseph J. Strachila  
WBO Seattle

### 30-YEAR AWARD

William E. Acord  
WBAS Medford  
25-YEAR AWARDS  
William B. Allen  
WBO Pomona  
John P. Junkins  
WBAS Winnemucca, Nev.  
Robert L. Schmidt  
WBAS Helena  
Gordon C. Shields  
WBAS Los Angeles

### 20-YEAR AWARDS

Thomas D. Carter  
WBAS Salt Lake City  
Edna Pass  
RO Salt Lake City  
Warren W. Winden  
WBAS Burbank  
15-YEAR AWARDS  
Damon B. Capps, Jr.  
WBAS Salem  
C. H. Stanton Massey, Jr.  
PWP San Francisco  
Maynard H. McPhee  
WBAS Olympia

## REGION V

**25-YEAR AWARD**  
Isaac W. Lord  
WBAS Fairbanks

**15-YEAR AWARD**  
John F. Loopstra  
WBAS Anchorage

## REGION VI

**35-YEAR AWARD**  
James W. Osmun  
RO Honolulu

**20-YEAR AWARD**  
James E. Smith  
WBAS Honolulu

## CENTRAL OFFICE

### 35-YEAR AWARDS

Glenn Bowle  
Budget & Acctg. Div.  
Walter Okerlund  
Climat.  
James Sweet  
Hydro.

### 30-YEAR AWARDS

Mabel Copland  
Budget & Acctg. Div.  
J. Glenn Dyer  
Polar Oprs. Project

### 25-YEAR AWARDS

Thomas Ashenfelter  
MR  
John Eberly  
Off. of ESSA Administrator  
Sam Ferruzza  
Pers. Div.  
Gertrude Fricke  
Climat.  
Glenn Justema  
NWSC  
Samuel Otilin  
Hydro.  
Katherine Wallace  
Pers. Div.

### 20-YEAR AWARDS

Elbert Atkins  
SDO Sterling, Va.  
Augustus Hill  
SDO  
John Hope  
NWSC Miami  
Mary Lee Hulmes  
Exec. Off.  
Charles Kemper  
Budget & Acctg. Div.  
Cora Ludwig  
Hydro.  
Otis Payne  
Fac. & Maint. Div.

### 15-YEAR AWARDS

William French  
NMC  
Marietta Meyer  
Adm. Oprs. Div.  
Frederick Van Cleef  
NWSC

## NATIONAL WEATHER RECORDS CENTER

### 35-YEAR AWARD

Franklin W. Long  
**25-YEAR AWARDS**  
Horace W. Chapman  
Raymond V. Clark  
Kenneth L. Hein

### 20-YEAR AWARDS

John B. Benson  
Louis M. Cundiff  
Edna M. Jarrett  
Olice O. Owens  
Frances P. Sluder  
Audrey M. Warren  
Dick M. Whiting

### 15-YEAR AWARDS

Carl L. Crandall  
Hobart L. Rector  
Henry W. Stauffer

# Deaths

**ARTHUR R. LONG,**

Meteorologist in Charge at the Weather Bureau Airport Station in Montgomery, Ala., since 1949, died July 2. Mr. Long joined the Weather Bureau in 1918 at Leesburg, Ga., and later served at Due West, S.C.; Broken Arrow, Okla.; Memphis and Knoxville, Tenn.; and Meridian, Miss. After serving as Assistant Regional Director at Atlanta, Ga., from 1941 to 1944, he transferred to WBAS Albuquerque, where he was MIC until 1949. In 1964, Mr. Long was awarded the Department of Commerce Silver Medal for meritorious service. A graduate of West Tennessee State Teachers' College, he did graduate work at Pennsylvania State College, the University of Alabama, Portland State College, and Huntington College. Mr. Long is survived by his widow, Frances, and four children. Mrs. Long resides at 1106 E. Audubon Road, Montgomery, Ala.

**DIX E. NEWTON,**

Meteorologist in Charge at the Weather Bureau Airport Station in Lexington, Ky., died on June 12. He began his career with the Weather Bureau in 1930 as a Junior Observer at Ithaca, N.Y. He also served at Buffalo, Cincinnati, Louisville, and Cleveland, and was Meteorologist in Charge at WBAS Lexington from 1947 until his death. Mr. Newton is survived by his wife, Ellen A. Newton, and three sons who reside at 103 Devine Ave., Lexington, Ky.

**GLOVER C. BLINDE,**

a retired Meteorological Aid, formerly at the Weather Bureau Airport Station in Denver, died July 8 at his home in Denver. He began his Weather Bureau career in 1937 as a Junior Observer at Denver, and was transferred to Shreveport, La., three years later. After serving as an Army Air Force Weather Officer during World War II, he returned to the Denver WBAS in 1947, where he served until his retirement in 1959. Mr. Blinde studied engineering at the University of Colorado.

**CHARLES S. GIRTON,**

an Aviation Forecaster at the Weather Bureau Airport Station in Los Angeles, died on August 2. After serving as an officer in the Army Air Force Weather Service during World War II, he joined the Weather Bureau in 1946 as a Meteorologist at Ft. Worth, Tex. In 1947, he transferred to WBAS Los Angeles, where he worked in the Aviation Forecasting Unit until his death. A graduate of Pennsylvania State Teachers' College, he later studied meteorology at U.C.L.A. while in the Army Weather Service. He is survived by his wife, Ruth, and two children who live at 13329 Dronfield Ave., Fylmar, Calif.

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