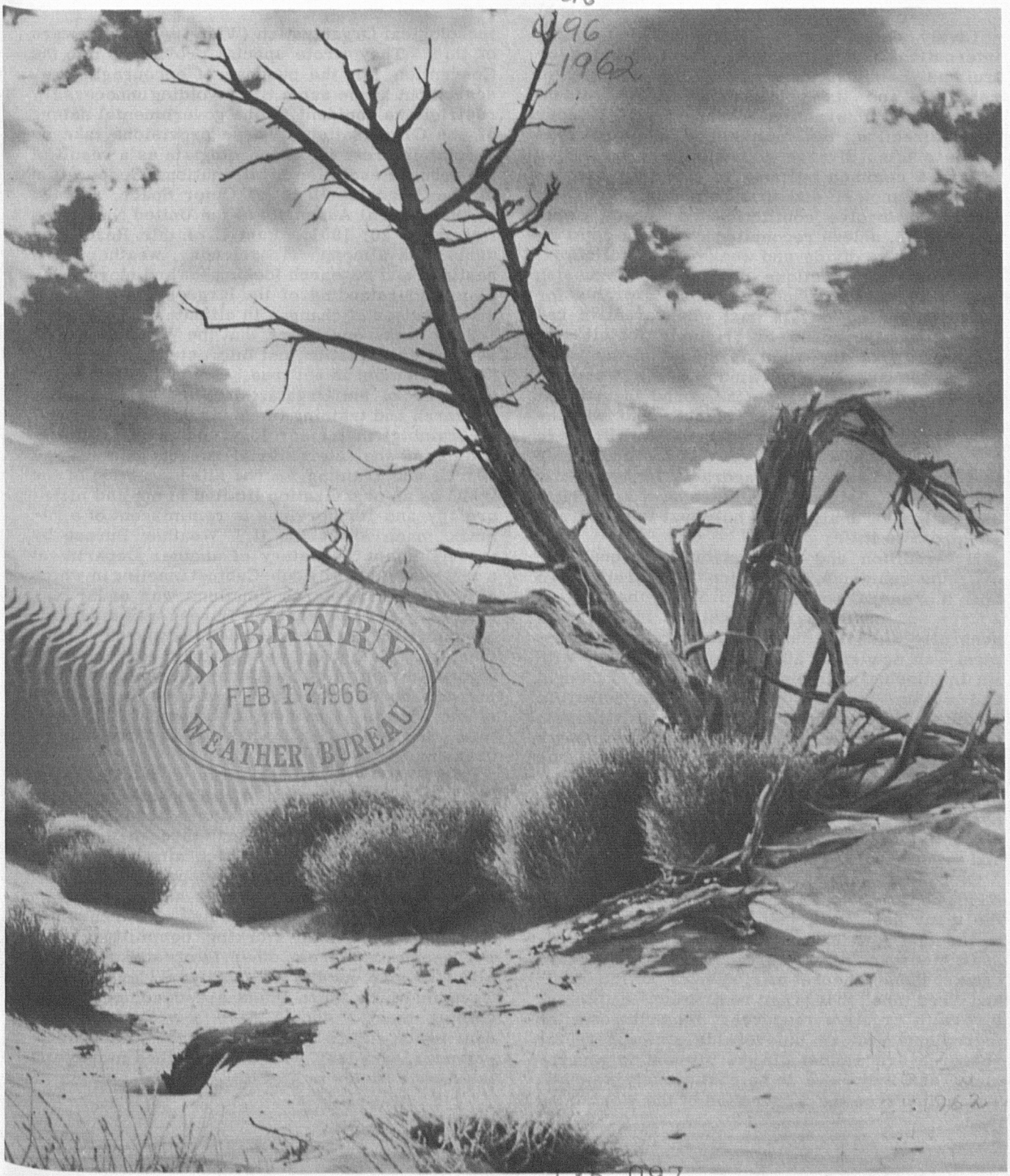
U.S. Weather Bureau

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU
Volume 21 JANUARY 1962

TOPICS

RARE BOOK
QC
875
.U6
A96
1962



LIBRARY
FEB 17 1966
WEATHER BUREAU

135 097

National Oceanic and Atmospheric Administration
Weather Bureau Topics and Personnel

ERRATA NOTICE

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

Discolored pages
Faded or light ink
Binding intrudes into the text

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

HOV Services
Imaging Contractor
12200 Kiln Court
Beltsville, MD 20704-1387
November 1, 2007

Editorial

Research and the WMO

Lively debate seems likely in forthcoming international meetings over the principles or truisms commonly applied to the planning of research and its relationship to government funding and international cooperation. Under wise direction, the motivations and practices in these often diverse activities may be shaped toward a common purpose so that they supplement one another and thus gain in strength; but they also involve conflicting views and practices which, unless reconciled toward the common purpose, may divide and weaken the total effort.

One of the questions now under discussion refers to the "atmosphere" most favorable for research. The day is past when creative research was supposed to originate fortuitously somewhat like the wind as stated in the well-known passage: "The wind bloweth where it listeth and thou hearest the sound thereof but canst not tell whence it cometh and whither it goeth..." Even before World War II, there had been many studies of the circumstances that appear to be most favorable for scientific research and, since 1945, there have been many and extensive analyses of how best to encourage and promote it.

By tradition and well-established reputation over the centuries, institutions of learning have been a principal source, and probably the greatest source, of creative research. It is therefore generally accepted that the university environment--an academic atmosphere or climate with its intellectual stimulus and freedom of thought and action--is one of the best for scientific studies. The university has other advantages, for example, the new ideas and devoted work of graduate students who come year after year in an endless stream. A converse tradition that grew up long ago is that the circumstances inherent in a government organization make it difficult for the research scientist to be creative and productive.

Of course, the bias against in-house government research has been largely discredited by the many successes in government laboratories in the last few decades. Most government research organizations are now alert to guard against those inherent attributes of "officialdom" and "red tape" that breed restrictions and interfere with creative research. Nevertheless, the ingredients for an unfavorable atmosphere for research are almost always present in government, and they have to be continuously watched. The authors of the Convention of the World Meteorological Organization (WMO) were well aware of this. They wrote special provisions into the Convention for the purpose of encouraging research but at the same time avoiding unnecessary restrictions incident to the governmental nature of the Organization. These provisions take on special interest to meteorologists as a result of the recent Resolution on International Cooperation in the Peaceful Uses of Outer Space, adopted by the General Assembly of the United Nations on December 20, 1961. Part C of this Resolution deals with atmospheric sciences, weather forecasting, and research looking toward more complete understanding of the large-scale and long-range causes of changes in climate.

Sometimes one hears that the WMO is "only a service organization, not interested in research." This statement is not true. One of the five stated purposes of the Organization is "To encourage research and training (meaning education, as well as training) in meteorology and to assist in coordinating the international aspects of such research and training." The misconception of the WMO as an organization limited to applied meteorology and its services is reminiscent of a remark made about the U.S. Weather Bureau by the Assistant Secretary of another Department a few years ago at a sub-Cabinet meeting in which allocation of research functions was under discussion. He said that the Bureau was a service organization not interested in research. Fortunately, his error was quickly corrected by vigorous rebuttal by the Under Secretary of Commerce who was present. Research productivity of the Bureau is evident in the scientific literature, and research capacity now is large and increasing.

The WMO will be called upon to take the leading role in the research in atmospheric sciences proposed in the United Nations Resolution. It will doubtless plan its efforts through use of the Technical Commissions, which aim to bring together the experts in their respective fields of meteorology in each country, and also by appointing special panels of leading research meteorologists and joint working committees with representatives from other interested scientific organizations at the international level. The ways in which these plans are developed in the coming months should have a very important bearing on future progress in the atmospheric sciences, and they will be described more fully in future articles in TOPICS.

F.W.R.

Topigrams

Washington, D.C.
January, 1962

In his State of the Union Message on January 11, President Kennedy noted the importance of meteorological satellites in this country's program of space exploration.

"With the approval of Congress," the President said, "we have undertaken in the past year a great new effort in outer space. ...Our objective in making this effort, which we hope will place one of our citizens on the moon, is to develop in a new frontier of science, commerce and cooperation, the position of the United States and the Free World.

"This Nation belongs among the first to explore it, and among the first--if not the first--we shall be. We are offering our know-how and our cooperation to the UN. Our satellites will soon be providing other nations with improved weather observations."

The closed circuit TV briefing unit at the Weather Bureau Airport Station in Miami has been accepted and placed on an operational basis. The equipment is identical to that at the New York International Airport (see TOPICS, March 1961, page 44) and is used primarily for briefing international flights. This is the second of five such installations planned by the Weather Bureau.

A new Weather Bureau Airport Station will be opened at Klamath Falls, Oregon, about February 1. The new station, located at Klamath Falls Airport, will operate daily from 8 a.m. to 5 p.m. with a two-man staff, providing service for the general public, agriculture, aviation, and the timber industry.

A closed circuit television system, called VIDMET, is undergoing shakedown tests in the Central Office. During the testing period, the system is being used to provide weather briefings for the technical staff. Monitor sets have been placed in several locations in the Central Office, including the basement seminar room. The briefing room on the sixth floor serves as the TV studio and is being remodeled to provide special lighting and sound treatment for the television presentation. It is hoped that the equipment will be ready in March, so that daily weather briefings can be transmitted to the meetings of the Commission for Synoptic Meteorology.

To provide the manpower needed for new programs authorized by Congress, the Weather Bureau is intensifying recruitment of meteorologists, engineers, physicists, and mathematicians. During the spring of 1962, Bureau representatives will travel throughout the United States, visiting most of the universities that offer major courses in meteorology. Interviews will be held with students interested in applying for Weather Bureau positions or in becoming student trainees. The Bureau representatives will be at Florida State University on February 13; University of Wisconsin, Feb. 21; Massachusetts Institute of Technology, Feb. 28; City College of New York, Feb. 28; University of Texas, Feb. 28; University of Washington, Feb. 28; Pennsylvania State University, March 7; St. Louis University, March 7; University of Utah, March 7; New York University, March 14; A & M College of Texas, March 15; University of California at Los Angeles, March 20; University of Chicago, April 3; and University of Michigan, April 4. Other colleges with meteorology graduates will also be contacted.

Briefs from the CO Staff Conferences

The Weather Bureau and the National Aeronautics and Space Administration have adopted a memorandum of understanding on the responsibilities of each agency in the operation of the National Operational Meteorological Satellite System. A new Weather Bureau organizational branch, called Meteorological Satellite Activities, was created on January 10 to carry out the Bureau's responsibilities under the agreement. The staff discussed plans for using data from TIROS and Nimbus satellites and the efforts to improve distribution of satellite data both nationally and internationally. A series of conferences on this matter, within the Bureau and with other agencies, is now underway and should lead to availability of more information in more useful form.

At the request of the Department of Defense and the National Aeronautics and Space Administration, the Weather Bureau has been given the chairmanship of the Joint Meteorological Rocketsonde Committee. Under Chairman David S. Johnson, the Committee is coordinating rocket launchings and developing plans for an "operational meteorological rocketsonde network."

The staff discussed the need for a catalog of meteorological research and service activities in the Weather Bureau and elsewhere. The Bureau of the Budget considers the development of such a catalog to be an essential part of the Weather Bureau's responsibility for coordinating research and services in meteorology. Plans to proceed with this work are under discussion.

On December 14, representatives from the Office of the Science Advisor to the President, the Department of Interior, and the Department of Commerce, including the Weather Bureau, met to discuss establishment of Institutes or similar organizations to advance research and development in scientific hydrology.

Weather Bureau representatives will meet with the Federal Communications Commission to discuss identification of Weather Bureau forecasts and storm warnings distributed through regular communication channels.

New office space has been acquired at 4880 MacArthur Boulevard in northwest Washington to house the Hydrologic Services Division, the Training Section, and the Office of Forecast Development. The three units will move to the new quarters about February 15.

Staff conferences are now held on the second and fourth Wednesday of each month, rather than weekly. The staff has found the conferences most valuable for disseminating information, and means for broadening participation in the conferences have been considered. It has been suggested that the participants transmit information discussed at the conferences through meetings with their own Section Chiefs. Special staff conferences on subjects calling for immediate decision or action will continue to be called for program leaders directly concerned. Such conferences involving several division heads and assistant chiefs, are usually found necessary on an ad hoc basis several times weekly.

Employee's Photo Wins Top Trophy In Commerce Show

Samuel Dean Green, an inspector at the Salt Lake City RAO, has won the best-in-show trophy in the worldwide Department of Commerce photography contest, held November 27 through December 6.

Mr. Green's winning photo, showing a gnarled tree on a sand dune against a background of windswept sky, appears on the cover. The picture also took top honors in the black-and-white landscape division of the contest. Another of Mr. Green's photos took first prize in the portrait division.

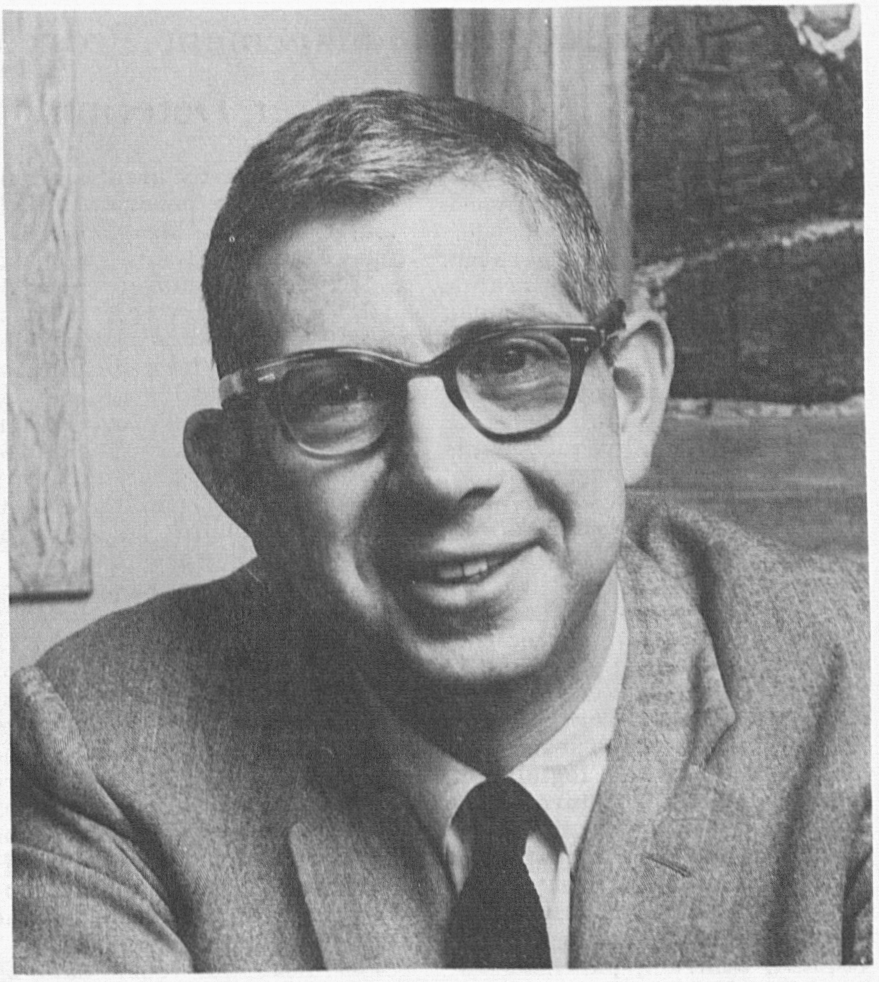
The contest, with 515 photographs entered, awarded 24 prize ribbons and two best-in-show trophies. Mr. Green won the trophy for the judges' first choice. The other trophy, awarded for contest viewers' best-in-show choice, went to Frank Cacciapaglia, a Patent Office employee. His entry was a color portrait of Benjamin Black Elk, a Sioux Indian.

Mr. Green is the president of the Salt Lake Photographic Print Society. A winner in previous photo contests, he took top prize in the national snapshot contest several years ago. His 1961 contest entry also reached the national finals.

'Claim Kits' Now Ready

"Claim Kits," for maintaining records of medical expenses, are available to employees enrolled in the Government-wide Indemnity Benefit Plan. Field stations may request the kits from the local offices of Aetna.

Several months ago, Blue Cross-Blue Shield made similar arrangements to provide kits for subscribers to the Government-wide Service Plan.



William Ruder

Assistant Secretary of Commerce For Administration and Public Affairs

William Ruder is serving as Assistant Secretary of Commerce for Administration and Public Affairs under a recess appointment by President Kennedy.

Mr. Ruder had been Special Assistant for Public Affairs since early in 1961. Before coming to Washington, he was Chairman of the Board of Ruder and Finn, Inc., a New York public relations firm that he founded with his partner, David Finn, in 1948.

Mr. Ruder was born in New York City and is a graduate of the City College of New York. During World War II, he was a Captain in the Air Force and served in the Pacific Area from December 1941 to February 1946.

Mr. Ruder is Vice-Chairman of the United States Committee for the United Nations. He is a member of the Board of Directors of the New York Chapter of the Public Relations Society of America, National Organization for Mentally Ill Children, Inc., National Parkinson Foundation, Inc., Citizens' Housing and Planning Council of New York, Inc., and Popular Merchandising Company, Inc.

Improved Financial Management Procedures Permit Closer Determination of Program Costs

Over the past year or two, several changes have been made in the Bureau's financial management procedures. Some recent questions received from the field indicate that the overall aims of the new procedures are not fully understood.

Our financial management program has three basic goals:

(1) to meet legal requirements relative to the management of Government funds;

(2) to collect cost data for use in justifying appropriation requests; and

(3) to determine the cost of conducting various segments of the Bureau's activities.

By law, no funds can be spent except as provided in the appropriation acts. These acts, plus certain other legislation, legally define the nature of the programs for which the funds can be used. Consequently, the Bureau must make sure it spends its funds as Congress intended. Each person originating a travel request, contract, purchase requisition, etc., is asked to state the purpose of the expenditure. This makes it possible for the official approving the expenditure to determine that it is in line with an approved program.

The General Accounting Office checks Federal agencies to see that legal requirements are met. As an arm of the Congress, the GAO watches over the management of Government funds. During its audits, the GAO determines whether agencies are using good financial management practices. It also advises the Congress as to the accuracy of cost information supplied by the various agencies.

For years, the Weather Bureau used rather broad program areas in justifying its budget requests. For example, the General Weather Services activity covered observational, forecasting, hydrologic, and climatological programs. In fiscal year 1961, this activity area was divided into three separate activities: Weather Measuring and Forecasting; River Forecasts and Flood Warnings; and Climatological Services. These more descriptive categories make it easier for the Congress and other reviewing officials to understand Bureau programs and to evaluate proposed new programs. The change makes it necessary for the Bureau to gather information on costs for each separate program area.

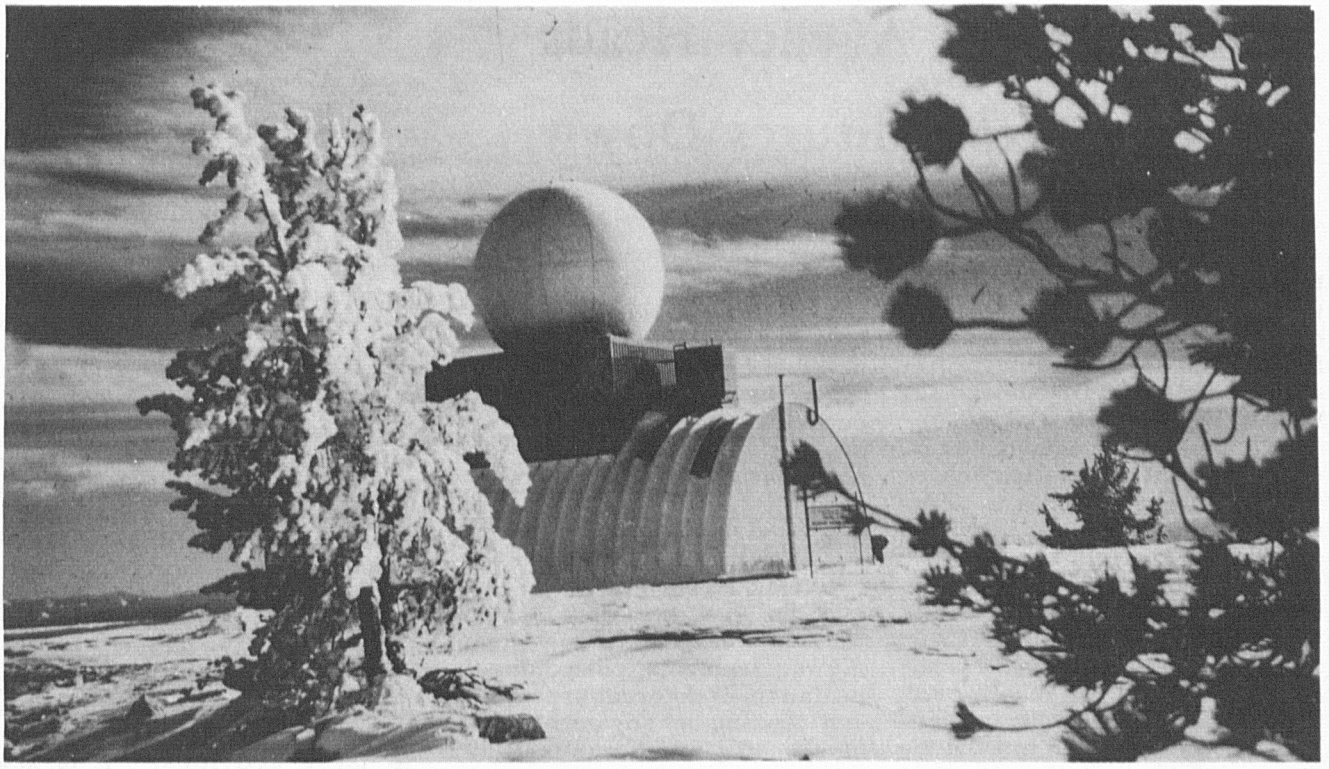
A further step in developing meaningful costs was started in fiscal year 1962 (July 1, 1961). This involves accounting for costs in each program area by logical subgroups. For example, in the Weather Measuring and Forecasting activity, costs are being gathered separately for programs such as surface observations, upper-air observations, radar, etc. Similar subactivities are being used in the other operating programs.

The need for cost data by program areas for use in justifying appropriation requests perhaps can be best understood by imagining that you are a member of a congressional appropriation committee. As you examine the budget for the Weather Bureau, you find that in fiscal year 1961 the Bureau is spending $1,411,000 for River and Flood Forecast and Warning Services. For fiscal year 1962, the Bureau is requesting an increase in this activity of $150,000 to set up a new river forecast center. Before you approve this request, you want to have two questions answered. First, how great is the need for the new river forecast center? Second, how valid are the cost figures before you? The answer to the first question will be obtained from the Bureau's written justifications, from the testimony of its technical specialists, and from your general knowledge and the advice of others regarding the flood problem in the area in question.

The answer to the second question probably will have considerable influence on your decision. Does the Bureau have cost figures for its river and flood forecasting services? If it doesn't know what its existing programs cost, how does it know $150,000 will be needed to set up the new river forecast center? The cost data now being gathered will help answer such questions for reviewing officials.

Sound internal management requires that data on the cost of the several operating programs be available. At the beginning of each fiscal year, the funds appropriated by Congress must be allocated to the Cost Centers (Regional Offices and Divisions) to support their various programs. Generally the amount of funds available to support continuing programs, as distinguished from new programs authorized by Congress, is inadequate. This comes about because of inflationary cost increases, higher rental, utility, transportation and communication rates, rising cost of supplies, pay increases, etc. Normally, Congress will not appropriate funds to meet the full cost of all these increases. Increases in prices are hard to prove in advance. Furthermore, Congress generally has taken the attitude that such increases should be met through more efficient management in the agencies and by curtailing programs which, as a result of changing conditions, have become obsolete or are of lesser importance. In order to establish an operating budget which corresponds with the appropriations approved by Congress, some hard decisions must be made. These decisions often involve cutting the funds and staff requested by the several Cost Centers for

(Continued on page 8)



Unique Mountaintop WSR-57 Now in Operation

The nation's highest and only remote-controlled weather radar began operating on Point Six Mountain near Missoula, Montana, on November 1, 1961. The WSR-57 radar antenna and modulator were installed by the Weather Bureau on Point Six Mountain at an elevation of 7,940 feet. The console and photographic repeater are 12 airline miles away in the Weather Bureau Airport Station at Missoula. A two-way microwave system controls the radar antenna and transmits the video information to the airport station.

The Point Six installation will test the effectiveness of a weather surveillance radar located atop a mountain and will provide radar data to the Weather Bureau and other agencies.

Extensive operational and research programs in fire weather and hydrology are conducted by the Forest Service, Corps of Engineers, Bonneville Power Authority, and others in this area. The Northern Forest Fire Laboratory in Missoula has its own repeaterscope connected to the WSR-57 for detecting and locating thunderstorms that might produce forest fires.

In its mountaintop location, the radar will be subjected to subzero temperatures and heavy snowfall, introducing many problems not encountered in other WSR-57 installations.

The Forest Service has built an 8.3-mile road to the top of Point Six. When heavy winter snows block the road, an oversnow vehicle will provide transportation to the top of the mountain. During the winter, the trip up the mountain will always be made by a two-man team, since sudden winter storms could make the journey extremely hazardous.

At the top are living quarters stocked with food supplies so that technicians and others may remain at the site for several days if necessary. The building has a snow entrance high above ground level to provide access when snow depths are great.

An extensive grid, containing about 6,000 feet of copper wire, was installed around the modulator building to protect personnel and equipment from lightning strikes.

Water, for purposes other than drinking, will be hauled to the site once a year and stored in a 12,000-gallon tank. Diesel fuel, for operation of the emergency stand-by generator, is stored in a 500-gallon tank. The building is heated by electric forced-air heaters.

The Missoula radar is the 29th WSR-57 in the Weather Bureau's nationwide radar network. During 1962, WSR-57's will be installed on Catalina Island and in Chicago.

President Asks Agency Heads To Keep Expenditures Down

(Continued from page 6)

The mid-year review of the budget, prepared by the Executive Office of the President, indicates that expenditures may run $6.9 billion above income for fiscal year 1962. Discussing the budget review with Cabinet officers and other agency heads, the President asked each agency to restrict expenditures in order to keep the deficit as small as possible. The following are excerpts from the President's statement:

"From the beginning this administration has followed a prudent budget policy in meeting national needs. With your cooperation it was possible to send the Congress appropriation requests more than $1 billion below the amounts originally asked by your departments and agencies. Furthermore, we have taken steps during the present year to save tens of millions of dollars by actions to improve efficiency. Modern cost-saving machines have been installed; field offices have been merged or closed; interdepartmental and advisory committees have been abolished; publications and exhibits have been curtailed; procurement practices have been tightened; greater use has been made of scrap and surplus material; wasteful duplications and variations have been eliminated; administrative structures have been streamlined; and other operations have been reorganized, pooled, consolidated or abolished."

"...Now that the Congress has adjourned, the budget has been reviewed in the light of congressional actions and other events since the budget proposals and estimates were made. The current outlook re-emphasizes the necessity to conduct the necessary work of the Government at the lowest possible cost, to eliminate or defer low priority activities, and to limit the number of Government employees to the absolute minimum."

"...The Congress has on many occasions made it clear that appropriations are only a ceiling, not a mandate to spend, and that department and agency heads are not required to spend every dollar appropriated. Accordingly, I have asked each of you to exercise the maximum care in scrutinizing all expenditures, tightening requirements, postponing the initiation of deferrable projects, and phasing out any acceleration of spending which was instituted as an antirecession measure.

"I am especially desirous that new programs or expansions of existing programs be undertaken with caution and deliberation, to make sure that sound criteria are used, careful plans are laid, and minimum funds are spent. I much prefer that obligational authority remain uncommitted where there is any doubt that expenditures would yield substantial returns to the national interest.

"I am also especially desirous that the number of Government employees be limited to the minimum consistent with getting the job done. There is no question that employment can be held substantially below the levels which would be possible under the funds authorized by the Congress, if strong efforts are made to achieve increases in productivity and efficiency, to use better techniques of management and production, and to staff each activity with only the minimum number of employees needed to carry out our objectives. I expect each of you to make such efforts."

their various activities and perhaps reducing or eliminating certain programs. Whether these decisions are good or bad depends in no small measure on how well the costs of the Bureau's going programs are known.

The instructions contained in Manual Chapter I-C-12 are designed to provide a basis for controlling the expenditure of funds and for collecting cost information regarding the various Bureau activities. Since the activities are, in many instances, integrated at the station level (i.e., observing, forecasting, hydrologic, and climatological activities all conducted in one office), it is necessary that the activities be clearly defined and that certain rules be established for charging costs to these activities. It is also necessary to have the assistance of the field operating officials in applying these rules, since only the official who orders supplies and services knows the purpose for which they are to be used.

An effort has been made to design a system that can be applied with a minimum of knowledge and work on the part of the operating field staff. The new system is not yet fully implemented. Any new operation of such magnitude requires some time to test out, eliminate procedural difficulties, and achieve full benefits.

How To Write on Soggy Paper

It is necessary at times to note the date time group on the chart of the Alden recorder for the rotating beam ceilometer. Since the paper is damp as it issues from the recorder, ordinary pencils will either not write or may tear the paper. A ditto pencil writes easily without blotting or tearing the paper.

Recorded Forecasts Now on Telephone In Los Angeles

Residents of the Los Angeles area can now obtain recorded weather forecasts by dialing 554-1212 on their telephones. Inaugurated by the Pacific Telephone Company on December 22, 1961, the new service brings to 12 the number of such installations in the United States.

Recorded announcements are made at 30-second intervals day and night and cover Los Angeles and vicinity from the beach cities inland through the San Fernando and San Gabriel Valleys.

The Los Angeles Weather Bureau Airport Station sends weather information and forecasts to the telephone company on a private teletypewriter circuit at 2, 8, and 10 a.m., 12 noon, and 2 and 8 p.m. Additional messages are sent whenever there is a large change in the temperature or forecast.

Temperature values used in the forecast and current data are for Los Angeles International Airport (representing the beach cities), the Weather Bureau Office in downtown Los Angeles, and Lockheed Air Terminal in Burbank (representing the valleys).

New Forecast Program Provides 72-Hour Progs

A new forecast program providing 72-hour prognoses of sea-level fronts, isobars, precipitation, and surface temperature, began on September 18, 1961. The 72-hour prognostic charts are transmitted daily by facsimile.

The program is intended to provide guidance material for field offices in preparing agricultural, oceanic ship-routing, and other extended forecasts.

Alerted Air National Guard Units Get Support from Weather Bureau

The Weather Bureau is cooperating closely with the Air Weather Service to provide support for Air National Guard units alerted last summer by the President.

At airports where the Air National Guard has units on alert, a continuous weather watch will be maintained by Weather Bureau observers hired especially for the purpose. Their only duty will be to observe, with emphasis on changes in ceiling, visibility, weather, and wind, and code the information for teletypewriter transmission. At least two employees will be on duty around the clock, allowing a continuous watch for weather changes. As part of the program, teletypewriter equipment will be installed at Burlington, Vt.; Sioux Falls, S. Dak.; Pittsburgh, Pa.; and Fresno, Calif. All observations will be transmitted to military circuits.

Another Weather Bureau program, at bases where Air National Guard units are on active duty, involves taking joint-use observations for all scheduled hours of Air National Guard operation. Air Weather Service observers recently called to active duty are working with Weather Bureau staffs, particularly at smaller stations where other duties keep the civilian staffs from maintaining a close surveillance on rapid changes in weather.

All forecasts, reports, and facsimile weather charts are being shared with Air Weather Service officers as needed for Air National Guard weather support.

Five members of the Japanese House of Representatives visited the Weather Bureau on November 15 to discuss meteorological developments and cooperation between Japan and the United States. All five are members of the Special Committee on Promotion of Science and Technology. Above, J.W. Osmun, Deputy Chief of the Weather Bureau, presents material on Bureau programs to Masao Maeda, Chairman of the Committee. Looking on are Eiichi Nishimura, Koichi Yamaguchi, Ryoichi Oka, Tsuguo Ishikawa, Dr. Harry Wexler, and Paul H. Kutschenreuter.

The Six Senses of Speechmaking

by John A. Riley, Jr.

(Note: During his years in the Weather Bureau's agricultural program, John A. Riley, Jr., has made more than 150 speeches for many kinds of audiences. Mr. Riley, who is now Area Agricultural Meteorologist at Memphis, was asked to recommend some speechmaking techniques that might be useful to others, and he has submitted the following suggestions.)

Effective communication is a foundation of the modern Weather Bureau. Telephone, teletypewriter, and radio are routine tools; facsimile, television, and satellite communications are rapidly approaching the routine. However, at times nearly every weatherman finds himself in the position of returning to the mundane, facing a live audience. Sometimes this has the effect of taking some of the liveliness out of the speaker.

Some say speechmaking requires a sixth sense. But most speakers agree that practice and a few simple rules are the requirements. The following six senses of speechmaking may help when applied to a talk before a civic club, a technical meteorological group, or a commercial organization that needs information about the Weather Bureau.

Sense of Hearing--If the audience can't hear, there is very little need for a speaker. This is the most obvious sense, but it is very frequently ignored. Speak loudly, slowly, and distinctly enough to be understood.

Sense of Sight--Adequate visual aids help any talk. Look what TV did for radio. Color slides add another dimension and make the presentation more effective than do black-and-white slides. Color also helps when using posters or maps. Visual aids should be uncomplicated. Three slides showing three ideas are more than three times better than one cluttered slide. Like the speaker who can't be heard, the visual aid that can't be seen accomplishes nothing good.

Sense of Self-Respect--The audience, its leaders, or the Weather Bureau thought you had a worthwhile contribution or you wouldn't be on the stand--so speak up with confidence. Never apologize in a speech; if something is not correct, do something about it beforehand; if you can't, go on without comment. Sincerity is greatly admired in a speaker; to have true sincerity, you must have self-respect.

Sense of Audience Respect--Practice your delivery beforehand. You may be the world authority on the subject, but if you haven't decided what you are going to say and how you are going to say it before you reach the stand, it is usually quite obvious to the audience. A new speech should be "mouthed" at least three times (in private or in front of family or friends) before it is delivered to the chosen audience.

Sense of Timing--Next to the understandable speaker, the audience usually appreciates most the speaker who quits on time. The ending should be definite, such as a nod of the head and a "thank you". Never end with "I guess that's about all."

Sense of Humor--For a talk of 20 minutes or more, three jokes (beginning, middle, and end) keep most audiences awake. For less than 20 minutes, one joke usually suffices. Too many jokes cause a loss of respect for the speaker. To get the best from a joke, you should subtly indicate to the audience that it is on the way. This can be done by a change in the pace of the speech, or a smile, or both. Never tell an off-color joke or one that might offend someone or some group in the audience. Never make fun of yourself or your business. When in doubt about a joke, leave it out.

Finally, don't try to overpower the audience. Leave out extremely technical detail unless that is the specific reason for your speech. Details can be communicated much more effectively by a small mimeographed handout than by a speech.

CODIS Is Coming

Plans Underway for Improving Teletypewriter Systems

The Weather Bureau and the Federal Aviation Agency are developing plans for improving Service C and O teletypewriter systems. The new system, called CODIS (Service C and O Distribution), will include area circuits and a high-speed interchange system, as does ADIS, but will not include supplementary circuits such as those in the Service A system.

Service C will have nine area send-receive circuits (numbers 11 to 19) for collection of observational data and forecasts. Each area circuit will also be used to deliver to local stations essential material collected on the other eight area circuits. These area circuits will operate at 100 words per minute.

CODIS, the high-speed interchange circuit, will carry both Service C and Service O material at better than 1000 words per minute. All forecast centers, except those in Hawaii, Alaska, and Puerto Rico, will have access to all Service C and Service O material.

Each area forecast office could have one or more receiving circuits, similar to the ADIS local circuits, depending upon the total requirement. It is hoped that these circuits for receiving selected data from the CODIS high-speed system can be programmed so that an area circuit will not be needed by anyone having access to a "selected-data" circuit. This might save the cost of a few teleprinters, but what is more important, it should simplify the job of tearing and sorting paper.

Service O will have eight area circuits--letters A through H--one extending from each of the eight interchange centers. Service O input will be made directly into the high-speed system by the office having Service O sending responsibilities, and relay will be made to area and selected-data circuits. At times, these may be the same selected-data or area circuits as those for Service C. This means that some Service O data, such as international TAFORS, may be sent on a Service C area circuit, or that Service C and Service O material may be sent together on a single selected-data circuit or may be mixed on two or three selected-data circuits. If required, the Service C material may be programmed on one selected-data circuit and Service O material on a separate selected-data circuit.

Although circuit routings have not been completely worked out, it is intended that the nine area circuits that will replace Service C be so arranged that the circuit boundaries will coincide with forecast boundaries. Seven of the nine area circuits will serve three forecast areas each. Since there are now only 25 public forecast areas, two of the area circuits will be limited to two forecast areas each. Generally, aviation forecast areas are the same as the public forecast areas so that circuit area boundaries and forecast area boundaries will coincide.

Considerable work still remains to be done on plans for CODIS operation. The Federal Aviation Agency is working with communications companies on circuit layouts, engineering, and other problems. Scheduling questions must be resolved by the Weather Bureau in cooperation with all users of Service C and Service O material. Although the target date for the start of CODIS is something over two years away, it is necessary that planning begin now to determine requirements and develop transmission schedules. The first step in this process has been started by asking selected Weather Bureau stations for preliminary information about their requirements for 6-hourly surface and upper-air reports. These requests went to stations other than forecast centers because the information needed now is limited to users who will have only one area circuit.

In time it will be necessary for the Central Office to ask other stations for information. The C.O. will try to keep all stations advised of developments so that they will fully understand how CODIS works. It is hoped that each station will take time to give careful answers to the questions which will be asked. Through cooperation and exchange of information between field stations and the C.O., some of the difficulties encountered in the ADIS system may be avoided.

Oregon State Offers Radar Courses by Mail

The General Extension Division of the Oregon State System of Higher Education is offering two correspondence courses in radar meteorology. Entitled "Radar Meteorology Ph C494" and "Radar Meteorology Ph C495", the courses each have three quarter hours of credit.

Tuition is $33.00 per course for Oregon residents, and $42.50 for non-residents. Chapter D-40 (Training) of the Weather Bureau Manual, Volume 1, contains information on payment of tuition by the Weather Bureau.

Application forms, and the 1961-62 Catalog of Correspondence Courses, which has further information, may be obtained from the Office of Correspondence Instruction, General Extension Division, 124 Education Hall, 16th and Alder, Eugene, Oregon.

Superior Performance Awards

William Allen,
WBO, Pomona
Francis Beers,
WBAS, Portland, Ore.
Marvin Burley,
RAO, Kansas City
William Chapman,
WBAS, Des Moines
Douglas Christensen,
WBAS, Brownsville
Raymond Crooks,
WBAS, San Francisco
George Fowler,
WBAS, Long Beach
Edward Gill,
RAO, New York
Dale Gossard,
WBAS, St. Paul Island
Walter Goto,
WBAS, Wake Island
William Grimes,
WBAS, Great Falls
Evelyn Kitahara,
Adm. Ops., Central Office
John Lanning,
WBAS, San Francisco
Nicholas Mavros,
RAO, New York
Emajon Meredith,
WBAS, El Paso
Robert Murray,
WBAS, Albuquerque
Richard Myers,
WBO, Lincoln
Forrest Paxton,
WBAS, Long Beach
Dorothy Ramminger,
WBAS, Madison
Anthony Rippo,
WBO, Long Beach
Violet Roadcap,
WRPC, Kansas City
Paul Romano,
RAO, New York
Halbert Root,
WBAS, San Francisco
Harold Sawyer,
WBAS, El Paso
John Stilz,
WBAS, San Francisco
John Sullivan,
WBO, Chicago
Cecil Tanner,
WBAS, Wichita
Robert Timeus,
WBAS, San Francisco
Grant Vaughan,
WBAS, Akron
Edward Wolfington,
WBAS, Indianapolis

Pacific Area, State Climatologists Selected

Merle J. Brown, the new Pacific Area Climatologist, moves to Hawaii from Salt Lake City where he has been State Climatologist for Utah and Nevada. Mr. Brown entered the Bureau in 1946, after four years in the Army Air Corps. In addition to his service at Salt Lake City, he has been stationed at Dodge City and Denver. Mr. Brown is a graduate of Kansas State Teachers College and has also attended the University of Chicago, Iowa State College, and the University of Utah.

E. Arlo Richardson has been selected to fill the Utah-Nevada State Climatologist position. Mr. Richardson has served at the Salt Lake City Weather Bureau Airport Station since 1947. He attended the University of Arizona, earned his B.A. and M.A. degrees at Brigham Young University and has completed additional studies at the University of Chicago. After teaching science in Utah schools, Mr. Richardson became a Junior Observer at Yuma in 1941 and later was stationed at Denver, Chicago, and San Francisco.

The new State Climatologist for Illinois, William L. Denmark, has been stationed at the Weather Bureau Airport Station in St. Louis since 1944. Mr. Denmark entered the Bureau in 1937 at St. Louis and served at Springfield, Kansas City, and Helena, Montana, before returning to St. Louis. He is a graduate of Southwest Missouri State Teachers College and has also attended Central Missouri State and St. Louis University. Mr. Denmark taught school and worked for the U.S. Engineers before coming to the Bureau.

RETIREMENTS

Jimmie W. Tresner

Jimmie W. Tresner, Printing Plant Supervisor at the National Weather Records Center, retired on January 14 after 41 years with the Weather Bureau. He entered the Bureau at Oklahoma City in 1920 and served there for 24 years before moving first to Fort Worth, then to Kansas City, and finally to Asheville. Mr. Tresner's address is 47 Melrose Avenue, Asheville, North Carolina.

Howard Simmons

Howard Simmons, Principal Assistant at the Weather Bureau Airport Station in Evansville, Indiana, retired on November 27. After graduating from Oakland City College, Oakland City, Indiana, Mr. Simmons taught high school mathematics and science in Indiana and Illinois. He entered the Weather Bureau at Evansville in 1939 and has served there throughout his career, except for a two year assignment in Chicago. Mr. Simmons' address is 808 Covert Avenue, Evansville 13, Indiana.

Iva B. d'Alpuget

Mrs. Iva B. d'Alpuget, Secretary to the Chief of the Forecasts and Synoptic Reports Division, retired on December 31. Mrs. d'Alpuget entered the Weather Bureau in 1930 and served in the Office of the Chief Clerk, the Office of the Assistant Chief, and the Climatological Division, before joining the Women's Army Corps in 1943. While in the WAC, she was stationed in Algiers and Naples. Returning to the Bureau in 1946, Mrs. d'Alpuget worked in the Station Operations Section and the Arctic Section and was then assigned for five years to the Office of the Meteorological Attache in the United States Embassy in London. Since 1951, she has been with F&SR. Mrs. d'Alpuget's retirement address is c/o Miss Augusta Brooks, 6235 Arcadia Street, Kansas City, Kansas.

Helen Woods,
RAO, Kansas City
Andrew Zamborsky,
NMC, Central Office

Length of Service Awards

45-Year Award

Andrew P. Keller,
WBAS, Syracuse

30-Year Awards

Mary W. Hodge,
IED, Central Office
Russell P. Mozeney,
WBAS, Corpus Christi

25-Year Award

Freda W. Taylor,
RAO, New York

20-Year Awards

Gilbert E. Anderson,
WBAS, Caribou
Harold G. Berner,
WBAS, Memphis
Julius F. Bosen,
Climat., Central Office
Arthur C. Erdahl,
RAO, Salt Lake City
Thomas M. Fleming,
WBAS, Tallahassee
Ellis R. Forrest, Jr.,
Adm. Ops., Central Office
Robert W. Gorseline,
PSL, Central Office
Bruce K. Harvey,
WBAS, Tampa
Robert E. Himberger,
WRPC, San Francisco
William E. Jackson,
DMO, Washington, D.C.
Paul J. Kane,
NWRC, Asheville
Frank P. Lee, Jr.,
IED, Sterling, Va.
Omi Loew,
WBAS, Lake Charles
Thomas Manning,
WBAS, Jacksonville
Amos A. McCurley,
WBAS, Amarillo
Anne M. McGuire,
Central Office
Robert C. McKinney,
WBAS, Sacramento
Ada M. McLeroy,
POP, Central Office
James M. Mosedale,
Adm. Ops., Central Office
Laura L. Nelson,
Hydro, Central Office

HERMAN C. STOMMEL (above), of the Forecasts and Synoptic Reports Division, was awarded the second prize of $50 in the Department of Commerce Suggestion Contest for the quarter ending June 30, 1961. Mr. Stommel suggested the "ring-through" telephone device which has saved an estimated $2,200 per year at each Bureau station where it is used.

Thomas A. Powell,
WBAS, Los Angeles
(Santa Monica)
Howard F. Rhodewalt,
WBAS, San Francisco
Theron E. Sallee,
RFC, Tulsa
Jennie T. Siemionko,
WBAS, Hartford
Ethel L. Sineath,
O&SF, Central Office
Alfred C. Slattery,
WBAS, San Antonio
William D. Stanford,
WBAS, Norfolk
Leroy W. Stankewitz,
WBAS, Roswell, N. Mex.
Charles H. True,
NHRP, Miami
George H. Webb, Jr.,
WBO, Cincinnati
Chalmers C. Wooden,
WBAS, Augusta, Ga.
John W. Zimmerman, Jr.,
WBAS, Dallas
Myer L. Zola,
NMC, Central Office

15-Year Awards

Gregory F. Bussiere,
WBAS, Albuquerque
H. James Byerly,
NWRC, Asheville
Carlisle F. Cherry,
NMC, Central Office
Eddie G. Christensen,
WSFU, Salt Lake City
Frederick H. Cummins,
WBAS, Atlanta
Roy A. Dahl,
WBAS, Memphis
Lena Drebert,
WRPC, San Francisco
John F. Feeley,
WBAS, Buffalo
Clifford E. Goodall,
AWP, New York
Frances Hutchins,
NWRC, Asheville
Leroy L. Jodrie,
NWRC, Asheville
Robert L. Litaker,
NWRC, Asheville
Conrad D. Maney,
NWRC, Asheville
Robert R. Peterson,
WBAS, Missoula
Richard V. Sedlak,
WBAS, Youngstown
Ralph R. Soller,
OMR, Central Office
Robert F. Webster,
WBAS, Philadelphia
George Whittaker,
WBAS, Peoria
Paul E. Woolard,
WBAS, Sheridan

Suggestion Award Winners

Stanley Wasserman	WBAS, New York Int'l Airport	$50
Milton Werbin	WBAS, New York Int'l Airport	25
Donald Boggs	NWRC, Asheville	15
Clyde Branks	NWRC, Asheville	15
Edwin Congdon	WBAS, Pueblo	15
William Eggert	AWRP, Atlantic City	15
Robert Helbush	Central Office	15
Thomas Kyle	WBAS, Oklahoma City	15
Billy Rice	WBAS, Kotzebue, Alaska	15
Rudolph Rose	NWRC, Asheville	15
Beulah Taylor	NWRC, Asheville	15

Memorial Fund Is Established For John T. Remick

An astronomical observatory and a weather recording station will be given to the Lockport, New York, high school in memory of John T. Remick, who was a Meteorologist in the Emergency Warning Section at the time of his death on March 23, 1961. Mr. Remick graduated from the Lockport high school in 1936.

Mr. Remick's father, Frederick N. Remick, has established a memorial fund and purchased a telescope and other instruments for the project. The clock-driven reflecting telescope will be housed in a circular building with a revolving domed roof. The weather station will be set up on the school's roof.

DEATHS

Laurence W. Browne

Laurence W. Browne, who retired in September 1960, died on January 1. Mr. Browne was a Meteorological Technician at the San Francisco Weather Records Processing Center at the time of his retirement. He had been with the Bureau for 32 years, serving at New York, Due West, S.C., Honolulu, and San Francisco.

Carl Hutchinson

Carl Hutchinson, Electronic Technician at Corpus Christi, Texas, died on December 24, 1961. He came to the Weather Bureau in 1959 by transfer from the Naval Air Station at Corpus Christi. Mr. Hutchinson is survived by his wife, Georgia Ann, of 4001 Baines Drive, Corpus Christi, three daughters, and three grandchildren.

Ralph B. Lee

Ralph B. Lee, Electronic Technician at the Weather Bureau Airport Station in Raleigh, North Carolina, died on December 1, while attempting to remove a radiosonde from a power line. Mr. Lee, who was 28 years old, had been with the Bureau since July. He is survived by his wife, Mrs. Geneva Mitchell Lee, and a son, Terry Ralph Lee, of 49 West Dixie Drive, Raleigh, North Carolina.

Ralph W. Neick

Ralph W. Neick, Meteorologist in Charge of the Weather Bureau Airport Station at Pocatello, Idaho, died on December 20. Mr. Neick came to the Bureau in 1928 at Buffalo, New York. Subsequent assignments have been at New Haven, Connecticut; Washington, D. C.; and Rock Springs, Wyoming. He was transferred to Pocatello in April 1954. Mr. Neick is survived by his wife Mildred and two children, Robert and Marlene, of 50 Trail Creek Road, Pocatello, Idaho.

Charles R. Nelson

Charles R. Nelson, Supervisory Meteorological Technician with the Atlantic Weather Patrol in Norfolk, Virginia, died on December 14. Mr. Nelson joined the Weather Bureau in 1931 as a Junior Observer at Ellendale, North Dakota. He later served at Bismarck, North Dakota; Medford, Oregon; Great Falls, Montana; Boston, Massachusetts; New York, N.Y.; and Norfolk, where he was assigned as Port Supervisor, AWP, for the past two years. He is survived by his mother, Mrs. Elizabeth Nelson, who resides at 1344 Seventh Avenue, San Diego 1, California.

Robert J. Noll

Robert J. Noll, Meteorological Technician at the Weather Bureau Airport Station in Miami, died on December 16, 1961. Mr. Noll entered the Weather Bureau in 1955 after 6 years in the Air Force. All of his Bureau service was at the Miami station. Mr. Noll is survived by his widow, Mamie O. Noll, 19110 NW Miami Court, Miami 69, Florida; a son, Gary R.; and a daughter, Linda.

Matthew I. Peacock

Matthew I. Peacock, Meteorologist in Charge of the Weather Bureau Office at Reading, Pennsylvania, died on December 14, 1961. Mr. Peacock entered the Bureau in 1917 at Eastport, Maine, with succeeding assignments in Pittsburgh, Ithaca, Albany, and Harrisburg. He became MIC at Reading in 1949. Mr. Peacock is survived by his wife, Mrs. Lucile A. Peacock, who lives at 218 Waverly Street, Shillington, Pennsylvania.

Meteorological Readings

Assignment No. LIV: This article, through a synthesis of several studies of the heat budget of the lower troposphere in winter, presents charts and otherwise compares patterns of heat sources and sinks resulting from the application of two methods--the thermodynamic method and the heat-balance method. "Normal Heat Sources and Sinks in the Lower Troposphere in Winter," by Philip F. Clapp, Monthly Weather Review, Vol. 89, No. 5, May 1961.

QUESTIONNAIRE

Col. 61 The Heat-Balance Method (for evaluating sources and sinks) depends on the theory that:

1. all sensible heat is transformed into kinetic energy
2. outgoing radiation balances the heat gained by condensation
3. the net gain in heat is the difference between condensation and evaporation
4. the net heat gain equals heat gain or loss due to evaporation or condensation, plus gain or loss due to radiation, plus gain or loss from turbulent exchange with the earth's surface

Col. 62 In the thermodynamic method (for evaluating the heating from 1000 to 500 mb.) the staff members computed the average velocity ($\bar{V}$):

1. from the 700-mb. chart
2. by averaging the actual winds at 1000 mb. and 500 mb.
3. indirectly by means of the vertical motion
4. none of the above

Col. 63 The Heat-Balance Method gives a more reliable pattern than the Thermodynamic Method, apparently because (mark all the correct statements):

1. it is free of errors associated with eddy terms
2. the contribution due to turbulent exchange with surface is well-known and easy to compute
3. truncation effects do not appear in these computations
4. we have reliable knowledge of precipitation fields over the northern hemisphere (over water, patterns, if not magnitude, are well known)

Col. 64 The main difference between a source and a sink is that:

1. only in a source can frontolysis occur
2. during an average winter more than 90 percent of the precipitation falls near the center of a source
3. on the average, a source represents an area where heat is added to the atmosphere (and cooling takes place in a sink)
4. all Lows originate in areas which are predominantly sources

Col. 65 In Fig. 1 the large centers of heating over eastern Canada and Siberia are in error (we know this because of certain climatological considerations). This error is probably due to:

1. non-systematic computation errors
2. approximations in computing vertical motions
3. insufficient rainfall data in these areas
4. heat advection was not considered

Col. 66 In deriving a pattern of sensible heat exchange over land the author:

1. extended Budyko's analysis through mountainous regions
2. used Koppen's 12 climatic stations
3. was forced to rely on data that was not available to Budyko
4. used Budyko's world-wide climatic classifications

Col. 67 Using the results of the Heat-Balance Method in conjunction with equation 4 showed:

1. that the low-latitude semi-permanent long waves were self-sustaining
2. the computed energy formed to be more important than friction at 40° N. latitude
3. significant production of eddy energy in the subtropical zone
4. both eddy and zonal energy amounts far below the average frictional dissipation

Col. 68 The "net radiative flux divergence"

1. is derived using data for the 1000-500-mb. layer
2. depends upon the extension of Budyko's lines of constant sensible heat exchange through the mountains
3. shows a poor but slightly negative correlation
4. as computed shows the largest relative maxima to be located over land rather than ocean

Col. 69 Consideration of figures 1, 5, and 6 shows the following to be true (mark all correct answers):

1. A ring of maximum heating exists near the equator
2. A broad region of cooling exists ahead of a pronounced thermal trough over Asia
3. Heat sinks exist to the east of long wave ridges in western North America and the eastern Atlantic
4. The Mediterranean is the most important heat source in the middle latitudes

Col. 70 The author concludes that the semi-permanent systems are energy-producing on the average because:

1. the thermodynamic method results in a negative heating-temperature correlation
2. the curves as plotted in figure 7 clearly establish this
3. the large functional dissipation of energy in these regions requires such an energy-producing source
4. he accepts as essentially correct the pattern given by the heat-balance method

Welcome to the Weather Bureau

Donald T. Acheson, General Engineer, Central Office
Donald C. Ayers, Weather Data Editor, Central Office
William H. Barber, Student Trainee, Central Office
Eugene S. Bradley, Electronic Maintenance Technician, Eureka, Calif.
Luther M. Brown, Meteorological Technician, Cordova, Alaska
Robert R. Brown, Meteorological Technician, Akron
Garland M. Byrum, Meteorologist, Tifton, Georgia
George P. Carranza, Meteorological Technician, Fort Worth
Ramon A. Choffe, Meteorological Technician, Winnemucca
M. Alice Clark, Clerk-Stenographer, Central Office
Thomas P. Clarke, Meteorological Technician, New Orleans
David L. Collins, Meteorologist, Wallops Island
Michael V. Connolly, Meteorological Technician, Albuquerque
John S. Cornett, Meteorologist, Las Vegas
Charles L. Courtright, Meteorological Technician, Chicago
William J. DeRouse, Meteorological Technician, Kansas City
Berwick August Drews, Budget Analyst, Central Office
James R. Gates, Jr., Electronic Maintenance Technician, Fort Smith, Ark.
Mabel German, Time, Leave, and Payroll Clerk, Anchorage
Fredric Allen Godshall, Meteorologist, Central Office
James M. Havens, Meteorologist, Central Office
Ralph R. Hocker, Meteorological Technician, Montgomery, Ala.
Gerald F. Hoffman, Meteorological Technician, New Orleans
Ronald H. Huber, Meteorological Technician, Idaho Falls
Charles E. Jenkins, Meteorological Technician, Washington, D.C.
Fred J. Jenkins, Meteorological Technician, Winnemucca
Edward A. Jessup, Meteorologist, Indianapolis
Harry M. Johnson, Meteorologist, Central Office
Richard H. Johnson, Meteorological Technician, San Antonio
Albert S. Kachic, Hydraulic Engineer, Hartford
Lanita D. Keith, Clerk-Stenographer, Fort Worth
Charles A. Klunder, Meteorological Technician, Glasgow, Mont.
Alan N. Kynett, Meteorological Technician, Glasgow, Mont.
Ruby M. Lamb, Clerk-Stenographer, St. Louis
Edward Lashua, Electronic Maintenance Technician, Missoula
Ann S. Lewis, Clerk-Typist, Fort Worth
Ronald D. Linder, Meteorological Technician, Glasgow, Mont.
James M. Lipscomb, Electronic Maintenance Technician, Huntsville, Ala.
Gary T. Longley, Sr., Meteorological Technician, Kotzebue, Alaska
Mabel K. Schumacher, Clerk-Stenographer, Memphis
Jo Ann Sckizina, Clerk-Typist, Asheville
Helen R. Seddon, Accounting and Fiscal Clerk, Salt Lake City
Alfred J. Shaw, Meteorologist, Port Arthur
Harry S. Shaw, III, Meteorological Technician, Memphis
John F. Sheridan, Meteorologist, Tulsa
Gilbert K. Shikiya, Meteorological Technician, Canton Island
Andrew Shropshire, Jr., Meteorological Technician, Central Office
Claire L. Shunk, Clerk-Typist, Central Office
William E. Sizemore, Meteorological Technician, Huntington
Barbara S. Smith, Clerk-Typist, Asheville
Johnnie M. Smith, Meteorological Technician, Greensboro
Mark E. Smith, Meteorological Technician, Central Office
Walter M. Smith, Meteorological Technician, Point Mugu
James B. Soileau, Meteorological Technician, New Orleans
Evelyn H. Spearman, Telephone Operator-Information Clerk, Central Office
Ramon Spencer, Meteorological Technician, Central Office
Meyer W. Stanley, Stock Control Clerk, Central Office
William C. Stanley, Electronic Maintenance Technician, Seattle
Sybil Ann Stewart, Mathematician, Central Office
Walter L. Stowell, Meteorological Technician, Nantucket
William G. Summer, Jr., Meteorological Technician, Cincinnati
William W. Tanner, Meteorological Technician, Silver City, N. Mex.
Joseph A. Tikvart, Student Trainee, St. Louis
George Tisdale, Meteorological Technician, Central Office
Clifford K. Todd, Jr., Meteorological Technician, San Francisco
Sara B. Tomasello, Clerk-Typist, Central Office
Hattie Toney,
Hattie Toney, Card Punch Operator, San Francisco
Preston O. Tuning, Meteorological Technician, Huntington
Margene C. Tweedie, Secretary, Salt Lake City
Nan D. Van Pelt, Meteorological Technician, Laredo
Herbert J. Viebrock, Meteorologist, Central Office
Jack H. Vochatzer, Engineering Technician, Fort Worth

Transfers

	FROM	TO
Bruce M. Aikins	Fresno	San Francisco
James K. Angell	Central Office	Bracknell, England
Charles O. Baker	Yakutat	Juneau
Edward H. Baker	Glasgow, Montana	Winslow
Richard W. Barrell	Montgomery	Augusta
Louis Billones	San Francisco	Sacramento
Dana A. Blandin	Baltimore	Philadelphia
Richard B. Burgett	Los Angeles	Flagstaff
John Carballa	Buffalo	Brownsville
William E. Cobb	Hilo, Hawaii	Central Office
Arlo Grant Dunbar	Omaha	Las Vegas
Howard H. Engelbrecht	Baltimore	Central Office
Keith L. Ewing	Pendleton, Oregon	San Francisco
William L. Exley	Bethel	St. Paul Island
Walton A. Follansbee	Richmond	Wallops Island
John E. Foster	Baltimore	Philadelphia
Robert E. Freeman	Tampa	Las Vegas
George M. Fugate	Galveston	El Paso
William C. Gregory	Silver City, N. Mex.	Tampa
Benjamin A. Halstad	Resolute Bay	Las Vegas
Gilbert A. Hanaike	Johnston Island	Hilo, Hawaii
Donald R. Hardy	Point Arguello	Flagstaff
James P. Haughey	New York	Huntington, W. Va.
John W. Hertel	St. Paul Island	Sault Ste. Marie
Bernard M. Hohenberger	Central Office	McGrath, Alaska
Stanley G. Holbrook	Asheville	Oklahoma City
Edgar G. Hultman	Baltimore	Philadelphia
Samuel O. Iyar	Koror	Ponape
Roy F. Jorde	Central Office	Bismarck
Kenneth W. Kemper	Oakland	Flagstaff
Ronald J. Kowalski	Sault Ste. Marie	Eniwetok
Charles Hubert Lamb	Asheville	Huntington
Wayne E. Lambert	Washington, D.C.	Wallops Island
George U. Luke	Wake Island	Canton Island
Munihichi Maeda	Las Vegas	Oakland
Albert Malach	Duluth	Fresno
John H. Maloney, Jr.	Wake Island	Antarctica
John W. Measells	Jackson, Miss.	Jackson, Tenn.
William M. Medley	Eniwetok	San Francisco
Joseph R. Morrell	Jacksonville	Eniwetok
Leland W. Mosedale	Asheville	Central Office
Omer E. Murray	Baltimore	Philadelphia
Charles T. Nugent	Baltimore	Philadelphia
Richard A. Nugent	Baltimore	Central Office
John C. O'Brien	Boston	Huntington
Edward W. Oscarson	Minneapolis	Oklahoma City
Raymond L. Plybon	Greensboro	Huntington
Reginald W. Preston	Alpena	Johnston Island
Paul D. Rank	Salt Lake City	Great Falls
Hobart G. Reeves	Kwajalein	Indianapolis
Robert C. Richard	Des Moines	Baltimore
John A. Riley, Jr.	Stoneville, Miss.	Memphis
Thomas L. Robertson	Central Office	Memphis
Earnest A. Rodney	Central Office	Asheville
Robert S. Roskuski	Flint	Isachsen, N.W.T.
Kenneth C. Rudeen	McGrath, Alaska	Asheville
Richard Lee Rutkowski	Resolute Bay	Antarctica
William A. Scharnikow	Norfolk	New York
Francis J. Schmidlin	New York	Wallops Island
Gary F. Schmidt	Mould Bay, N.W.T.	Ely, Nevada
Harold J. Shellum	Central Office	San Francisco
Franklin T. Shibuya	Honolulu	Antarctica
George G. Shulsky	Canton Island	Wake Island
Cecil E. Simmons	Fort Huachuca	Boston
David Smedley	San Juan	Central Office
Arthur H. Smith, Jr.	Central Office	Wallops Island
George B. Smith	Midland	Birmingham
Laurence K. Smith	Amarillo	Daytona Beach
Leslie Smith	Central Office	San Francisco
Raymond A. Smith	Lake Charles	Rochester
Richard A. Snyder	Houston	Shreveport
Robert L. Stalnaker, Jr.	Central Office	Brownsville
Leroy W. Stankewitz	Fort Worth	Roswell
William C. Stanley	Seattle	Winslow
Edward L. Stensland	Glasgow, Montana	Point Arguello
William Stosser	Louisville	Miami
Akira J. Suzuki	Ponape	Koror
Joseph Takach, Jr.	Boston	New York
Mark T. Takata	Kwajalein	Lihue, Hawaii
John R. Thomas	Hartford	Fort Worth

Coding Aid Suggested For Synoptic Messages

Weather Bureau stations operating sending facilities on Service C no longer need to prepare a copy of WB Form 630-4 containing the message, because surface synoptic messages transmitted over Service C teletypewriter facilities are now transcribed on WBAN 10A.

It has been suggested that these stations might use Form 630-4 as a guide in encoding the synoptic message. If the form is stapled between two sheets of transparent plastic, a grease pencil can be used to prepare the message; once the message has been transmitted, the form can be erased and re-used.

This idea is not feasible for stations that do not operate their own sending facilities, since FAA Flight Service Stations should receive a written copy of all transmissions originated by the Weather Bureau.

Typewriter Ribbon Hint

Many single-color typewriter ribbons are thrown away after only the top halves are worn out. This waste could be avoided by putting the ribbon selector on "red", but it makes key pressure increase. The best way to use the neglected lower half of the ribbon is to invert the spools and exchange their positions. In case the spools cannot be inverted, take out the ribbon and rewind it upside down.

Stipends for Scientific Research Available from Texas A&M College

The Department of Oceanography and Meteorology at the Agricultural and Mechanical College of Texas has announced the availability of fellowships and research assistantships to qualified graduates in physics, chemistry, geology, meteorology, biology, and engineering for 1962-63. Included are fellowships with stipends ranging from $2,000 to $4,000 and research assistantships providing $2,100 and upward for 12 months. High capability and broad scientific interests are required.

Fields of emphasis include physical oceanography, the interaction between ocean and atmosphere, sferics and radar meteorology, satellite meteorology, micrometeorology, agricultural meteorology, marine geochemistry, carbon dioxide relationships in the sea and atmosphere marine sediments, demineralization of sea water, estuarine pollution, coastal and estuarine geology, and experimental ecology.

Application forms may be obtained from the Head of the Department of Oceanography and Meteorology, The A. and M. College of Texas, College Station, Texas.

NEW MIC'S

Walton A. Follansbee

Walton A. Follansbee is the Meteorologist in Charge of the Weather Bureau's new Satellite Station at Wallops Island, Virginia. Mr. Follansbee entered the Bureau in 1941 at Elkins, West Virginia, and later served at Los Angeles, Wake Island, and Honolulu. At Elkins and Wake Island he held the position of MIC and, since October 1960, he has been MIC of the Weather Bureau Airport Station in Richmond, Virginia. A graduate of Davis and Elkins College, Mr. Follansbee attended New York University on a Weather Bureau scholarship.

Joseph R. Morrell

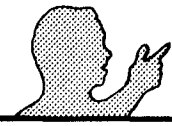
Joseph R. Morrell, the new Meteorologist in Charge of the Weather Bureau Airport Station at Eniwetok, has been an Aviation Forecaster at Jacksonville since 1958. Mr. Morrell is a graduate of Florida State University and served in the Army before coming to the Weather Bureau.

Welcome (continued)

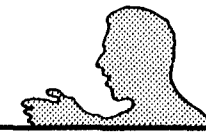
Paul J. Wade, Meteorological Technician, Athens, Ga.
Albert Weiss, Student Trainee, Central Office
Howard J. Wells, Meteorological Technician, Central Office
Jack N. Wheeler, Electronic Maintenance Technician, Truk
Steve N. White, Teletypist, Central Office
Annie K. Williams, Card Punch Operator, San Francisco
Curtis Bascom Wilson, Teletypist, Central Office
Dale Lee Wilson, Electronic Maintenance Technician, Kansas City
Judith L. Wintch, Clerk-Stenographer, Salt Lake City
Lynn O. Wolf, Meteorological Technician, Indianapolis
Billie J. Wright, Meteorological Technician, New Orleans
James F. Wright, General Supply Assistant, Central Office
Ferdinand Zegel, Physicist, Central Office
Thomas W. Zetty, Teletypist, Central Office
John W. Zimmerman, Meteorologist, Waco
Fred Lloyd Zuckerberg, Meteorologist, New York

Transfers (continued)

Charles W. Thomason,Jr.	Cordova, Alaska	Asheville
Lloyd W. Tourville	Central Office	Point Mugu
Richard L. Unruh	Winnemucca	Point Arguello
Isaac Van Der Hoven	Las Vegas	Central Office
Harold Q. Van Dyke, Jr.	Central Office	Wallops Island
Robert J. Waite	Thomasville	Tulsa
Russell A. Wallston	Pendleton	Pomona
Neil B. Ward	Oklahoma City	Kansas City
Walter Watson, Jr.	Arctic	Antarctica
William E. Weaver, Jr.	Midland	Antarctica
Don K. Weidner	San Antonio	Brownsville
Howard S. Wheless	Brownsville	El Paso
Carl E. Wistrom	New York	Atlantic City
Robert G. Woodard	Nantucket	Canton Island
Chalmers C. Wooden	Waco	Augusta
Thomas E. Zeigler	Burrwood	Midland
Charles W. Zewe	Lake Charles	Galveston



Forecasters' Forum



Salt Lake City Increases Use of NMC Products

With ever-increasing demands being made on Weather Bureau staffs, it seems imperative that we be constantly alert to unnecessary work and unnecessary duplication of effort which can be eliminated from our work programs. The practice of plotting and analyzing charts at stations which have facsimile appears to represent an area where considerable time might be saved, which in turn could be spent doing more useful work. With proper utilization of the voluminous NMC products available via the national fax circuit, most offices should be able to operate satisfactorily with very few, if any, locally prepared charts that more or less duplicate the fax charts. Some of the smaller offices are operating without any local chart preparation at all. Perhaps many of our larger offices, including some forecast centers, could make further progress in this direction.

Here at the forecast center in Salt Lake City we decided to see what could be done along these lines. Our hope is to minimize duplication of effort and to increase our dependence on NMC products through improved utilization of them. The time saved by reducing local duplication of work will be used to give the forecaster more time to think and to make better use of the fax materials. It is hoped that eventually this will lead to (1) some improvement in our forecasts, (2) improved briefings, (3) improved weather data displays, and (4) possibly some contribution toward a better facsimile program.

A few of the ideas we are trying are outlined below. They are not all original with us. Vincent Oliver, consultant to the Office of Forecast Development, is one who has helped us. It can be seen that we have no objection to local charting or other work if it serves a useful purpose and does not duplicate NMC products.

1. Beginning August 1, 1961, we discontinued our preparation of local surface synoptic maps which had previously been prepared four times daily. This saves 6 to 8 hours per day in plotting and analyzing time. This is on a trial basis. It may not be practical to get along without these charts during the winter.

2. When the new RADAT chart became available via fax on August 1, we discontinued local preparation of a 500-mb. chart twice daily. This saves another hour or more per day.

3. We have experimented a little with discontinuance of a small amount of winds aloft plotting that we have been doing, saving another couple hours or so per day, but this has not been resolved completely.

In the time saved by the above actions, we have been trying the following:

1. A moisture chart (not available on fax) is prepared for the western area. The minimum temperature-dewpoint spread between 700 mb. and 500 mb. is plotted with the height at which it occurs, and the moisture patterns are analyzed. This is quite useful in forecasting showers and thunderstorms in summer.

2. The 12-hour 600-mb. NMC prognostic chart is compared with the analysis nearest verifying time (they are available near the same time at this station). The comparison is then used to evaluate the trend of the prognosis as reflected in the 24-hour, 36-hour, 48-hour, 60-hour, and 72-hour 500-mb. prog. charts.

3. Pireps are plotted in red pencil on the weather-depiction charts. This keeps the latest ones on display (a new chart is available every three hours) and relates them to the weather patterns. It also conveniently delineates areas of turbulence, icing, etc.

4. In addition to coloring the weather depiction charts as suggested by the Central Office (red for cigs below 1000' or vsby below three miles, and blue for cigs 1000'-5000'), we color in light green the area having cigs above 5000'. These colors give a quick picture of low and middle moisture patterns. The maps are displayed one on top of another so earlier maps are available for noting changes and movements of moisture areas.

5. Stream lines are placed on winds aloft charts over western states at 10,000' and 20,000' levels. These are helpful in briefing ARTC supervisors three times daily.

6. A very abbreviated 700-mb. chart is prepared twice daily. This is because the fax chart is not received in time to be used for 16Z and 04Z FP forecasts.

We have a few other ideas which have not yet been tried, such as (1) modifying certain surface and upper-air fax progs to reflect changes revealed by later data; (2) after making any necessary modifications to prog charts, make our forecasts conform to these charts; (3) develop objective techniques for making max and min temperature forecasts and precipitation and cloudiness forecasts from 700-mb. prognosis of temperature and moisture fields. However, our thinking and planning on these matters are not yet settled. We must be careful not to undertake more than we

can handle and not to duplicate the work of OFDEV or others.

Forecast Staff
WBAS, Salt Lake City

Before preparing the preceding article, the MIC at Salt Lake City, O.R. Warner, had written to the Central Office about the ideas of his staff. In reply, Donald M. Hanson, supervisor of the Office of Forecast Development, wrote the following memorandum to Salt Lake City:

We have come to believe that the following are sound principles for field forecasters to follow in the practice of forecasting. These are given on the premise that, at this point, it is better to attempt to provide a broad framework within which you can decide what your approach ought to be, rather than attempt to suggest specifically what you ought to do. These principles are:

1. Begin with the NMC package of synoptic scale guidance rather than independently evolving a competing product.

2. Modify this synoptic scale guidance if necessary, either on the basis of internal inconsistencies in the guidance package itself, or on the basis of later data--but not simply on the basis of differences in opinion.

3. Handle synoptic scale moisture one way or another. Here it is not easy to know what approach to take. NMC makes and transmits analyses of surface-500-mb. precipitable water. The NMC QPF Unit makes analyses and prognoses of precipitable water and humidity, but not everywhere and not at all times, since they are dealing with a special problem. Moisture analyses, then, do feed into NMC guidance material, at least to a certain extent.

There are also those who will say that the dynamics of the atmosphere goes a long way in determining the distribution of moisture and that dynamics is more important in determining the distribution than horizontal advection. We would prefer to leave the entire question open at this time and encourage you to experiment along the lines you propose. A word of caution however--it is our impression that NMC's synoptic-scale cloud and weather guidance has improved significantly within the past year, possibly because of their relating these weather patterns more strongly to dynamic features and less to surface frontal progs. Theirs may be difficult to improve upon, except in details.

Thus far, we have been talking about synoptic scale systems. Without specifically defining the scales, there are usually details of sub-synoptic dimensions, within the synoptic framework, which are important particularly for shorter period forecasts (12 hours or less). NMC by and large does not attempt to handle these sub-synoptic scale systems, so it's a wide-open field for the field forecaster. This leads to the following principle:

4. Insert details which are related to "localized" topography, small-scale systems, etc. This would probably require plotting locally the maximum amount of data and analyzing in the greatest detail possible over a "reasonably small" area. Little is known, we believe, of the handling of these details, and much development work needs to be done. In the meantime, a start can be made by the entirely empirical approach such as characterized the beginning of synoptic meteorology.

These are broad principles, possibly over-simplified, which we believe could be fruitfully followed. We recognize that there may be some regional adjustments required. For instance, NMC guidance may have to be used somewhat differently in the Western States than in the East, etc. It should be emphasized that following these principles reorients the activities of the field forecaster--and expands rather than diminishes the area in which he can be creative.

You expressed concern about duplicating our effort. At the moment, we are mostly "looking" and thinking about the whole broad problem. We are looking toward a more solid documentation of the above principles and encouraging their adoption. We do intend to do considerable development work on the handling of sub-synoptic scale phenomena. I believe we do not have to be concerned about duplication at this point, but it behooves us to keep in contact.

Report from San Francisco

On June 1, 1906, Weather Bureau stations were required to submit their regular Report of Instruments for the Station, Form No. 4065. Instead of the form, the following letter was received from San Francisco, where the earthquake and fire of April 18 and 19 had destroyed property valued at 350 million dollars. In the envelope was a small bit of metal.

Chief, U.S. Weather Bureau
Washington, D.C.

Sir:-

Form No. 4065, Report of Instruments for the Station, should be rendered on this date. It is perhaps needless to say that every instrument at the San Francisco office was destroyed by the fire. I enclose what was left of the Triple Register. This piece of brass was detached from the base plate of the register by one of the office force in several feet of ashes about where the old instrument stood. It may be remembered that the register was in constant service for over thirteen years.

Very respectfully,

Alexander G. McAdie
Professor

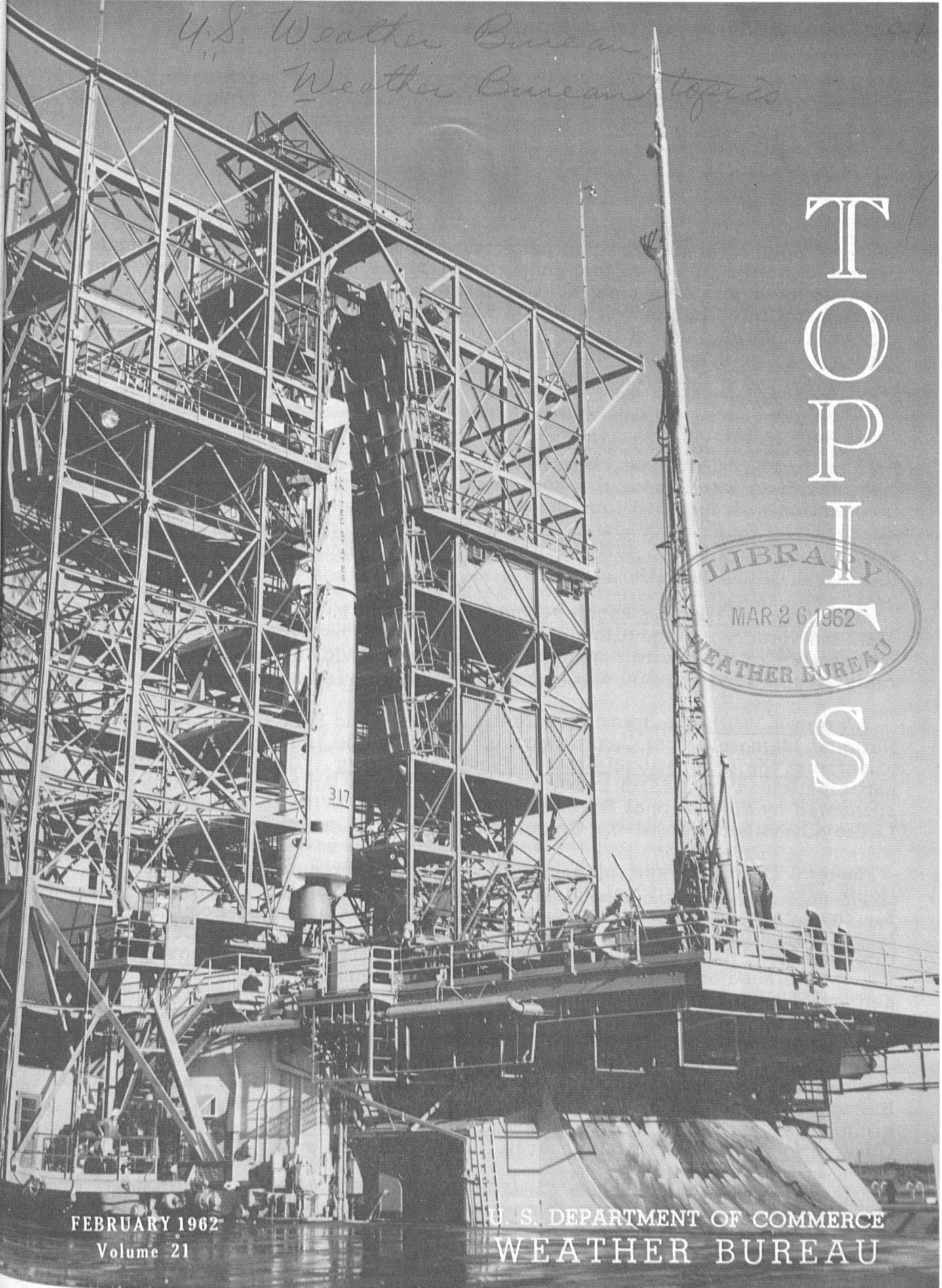
Volume 21 JANUARY 1962 Number 1

CONTENTS

Editorial: Research and the WMO	2
Topigrams	3
Briefs from the CO Staff Conferences	4
Bureau Employee Wins Commerce Photo Contest	5
New Assistant Secretary of Commerce for Administration and Public Affairs	5
Health Benefit "Claim Kits"	5
Goals of Financial Management Program	6
Missoula WSR-57 Begins Operation	7
President Asks Agencies To Restrict Expenditures	8
Recorded Forecasts Available by Telephone in Los Angeles	9
Weather Support for Air National Guard	9
Japanese Legislators Visit Weather Bureau	9
72-Hour Prognoses Transmitted Daily	9
The Six Senses of Speechmaking	10
CODIS Is Coming	11
Radar Correspondence Courses	11
Superior Performance Awards	12
New State Climatologists	12
Retirements	12
Length of Service Awards	13
Commerce Quarterly Suggestion Contest	13
Suggestion Award Winners	14
Deaths	14
Memorial Planned for John T. Remick	14
Meteorological Readings	15
Welcome to the Weather Bureau	16
Transfers	16
Coding Aid for Synoptic Observations	17
Fellowships Available at Texas A&M	17
New MIC's	17
Saving Typewriter Ribbons	17
Forecasters' Forum	18-19
Report from San Francisco	19

The cover picture, by Samuel Dean Green of the Salt Lake City Regional Administrative Office, was chosen best-in-show by the judges of the Department of Commerce photography contest (see story on page 5).

WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.



U.S. Weather Bureau
Weather Bureau Topics

TOPICS

LIBRARY
MAR 26 1962
WEATHER BUREAU

FEBRUARY 1962
Volume 21

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

Topigrams

Washington, D.C.
February, 1962

In recent months, members of the Weather Bureau's scientific staff have been called upon almost daily to participate in conferences on the importance of science to the future welfare and security of the United States. These conferences involve international as well as interdisciplinary programs. One committee, appointed by the White House for "evaluation of the scientific research capacity of various scientific agencies in this country," noted that the Weather Bureau has "built up a very impressive potential for scientific research in recent years." The Bureau's present research activities will be summarized in a future TOPICS article.

The American Meteorological Society's Conference on Severe Storms was held in Norman, Oklahoma, from February 13 to 15. About 70 Weather Bureau meteorologists were among the more than 300 who attended the meeting. In conjunction with the AMS conference, the Weather Bureau held an Operational Severe Local Storms Procedures Conference on February 12 and 16, where representatives from Bureau offices in the tornado belt had an opportunity to discuss their mutual problems.

The National Weather Records Center held "open house" to celebrate its 10th anniversary in Asheville. Three hundred employees toured the building on February 23 to acquire a general knowledge of NWRC operations. On February 27 and March 1, 500 adults and 800 students visited the Center.

Warren K. Wilhelm, formerly with the Analysis and Forecast Branch of the National Meteorological Center, arrived in Melbourne, Australia, during January to serve at the International Antarctic Analysis Center. The Weather Bureau's participation in the IAAC is part of the United States' Antarctic research program, sponsored by the National Science Foundation. Mr. Wilhelm succeeds Thomas I. Gray, who had been at the Center since 1959.

Several CO employees represented the Weather Bureau at the President's Conference on Occupational Safety, which met in Washington from March 6 to 8. The Conference was attended by more than 3,000 delegates from industry, labor, agriculture, Federal, State, and local governments, insurance, education, science, health, and private safety organizations. The emphasis this year was placed on safety problems in non-manufacturing industries, where 80 percent of all job injuries occur. Invitations to the Conference were extended to Dr. Reichelderfer, R.C. Grubb, Frank Houghton, A.A. Karpovich, A.B. Tugman, J.W. Osmun, E.L. Kvam, A.F. Sadowski, and E.D. Wiedeman.

Vaughn D. Rockney, Chief of the Observations Section, O&SF, and Christos Harmantas, Chief of the Upper-Air Section of IED, served as U.S. Delegates to the Third Session of the WMO Commission for Instruments and Methods of Observation. The Commission met in New Delhi from January 29 to February 15.

Max A. Kohler, the Bureau's Chief Research Hydrologist, is now in East Africa, heading a United Nations Technical Assistance Mission that is surveying the Lake Victoria drainage area.

Fourth TIROS Launched on February 8; Operational Program in Full Swing

At 7:43 a.m. on February 8, the fourth TIROS weather satellite was successfully launched by the National Aeronautics and Space Administration from the Atlantic Missile Range at Cape Canaveral. The first nephanalysis of TIROS IV photographs was transmitted on the high-altitude facsimile circuit at 3:30 p.m. EST on the day of launch.

Propelled by a three - stage Thor Delta launch vehicle, TIROS IV went into an orbit with a perigee of 450 miles, an apogee of 525 miles, and an inclination of 48.3° to the Equator.

One of the satellite's two cameras is equipped with a lens different from any used in previous TIROS satellites. The new lens reduces distortion and provides better resolution in the picture image, while preserving relatively large coverage. From an altitude of 475 miles, the lens covers an area of 450 miles on a side when the camera is pointing straight down.

Otherwise, the instrumentation in the 285-pound satellite is much like that in TIROS III. The second camera is identical to the wide-angle cameras in TIROS I, II, and III, covering an area 750 miles on a side when pointed straight down. Each of the two magnetic tape recorders can store up to 32 successive pictures for transmission when the satellite is within 1500 miles of one of the ground stations. Infrared experiments similar to those in TIROS II and III measure radiation in various spectral bands.

Operational Use

The cameras in TIROS IV are controlled from the data acquisition stations at Point Mugu, California, and Wallops Station, Virginia. When the satellite passes within range of either station, it is directed to photograph at specific times on succeeding orbits, depending upon the desired program from both engineering and meteorological points of view.

As the first step in preparing a program for the satellite, its orbit and attitude are computed at NASA's Goddard Space Flight Center, near Washington, D.C.

The Programming Section of the Weather Bureau's Meteorological Satellite Activities (MSA) then determines the areas beneath the satellite's orbit which will be of greatest interest to weathermen. The choice is limited by the orbit and attitude of the satellite, the power available, and the areas of daylight. In making their decision, meteorologists at MSA consider the data obtained from previous orbits, regions of potential storm development, and areas of interest indicated by conventional weather charts. The requirements of other government agencies and the plans of cooperating experimenters, both in the United States and abroad, are also considered. Once the decision has been made, Goddard Space Flight Center programs the appropriate commands for relay to the satellite by the data acquisition stations.

As the satellite circles the earth out of range of the readout stations, its cameras obey the commands, and the data observed are stored on magnetic tape. When TIROS again comes within range of a data acquisition station, the stored data are transmitted to earth in the form of electronic signals. The signals are recorded on tape at the readout station. The tape signals are then converted to pictures

(continued on page 26)

U.S.-Canadian Ice Study Begins After Launching of TIROS IV

Immediately after the launching of TIROS IV, 13 U.S. and Canadian planes took off from their bases to photograph ice distribution in the Gulf of St. Lawrence and the surrounding area.

This mass reconnaissance flight and other supporting observations had been arranged by the Weather Bureau, the Navy Hydrographic Office, the Canadian Weather Service, the Canadian Defense Research Board, and the Royal Canadian Air Force to coincide with photographs taken by the satellite.

On its second orbital pass, TIROS IV photographed cloud, snow, and ice distribution over the midwestern United States, the Great Lakes, southeastern Canada, the Gulf of St. Lawrence, and Newfoundland.

Similar programs were carried out for five days after launch, and another cooperative effort will take place during a two-week period in late March and early April, when the satellite is again active in the area of the Canadian Maritime Provinces.

The satellite data and other observations will be analyzed by scientists in the United States and Canada to determine the feasibility of using satellite photography in ice reconnaissance. The ability to keep frozen areas under regular surveillance would greatly improve forecasts of ice movement and breakup, which are so essential to shipping.

METHOD OF PURCHASE
Indicate Method by Number
1. Federal Supply Schedule
2. Federal Supply Stock
3. Surplus Property Transfer
4. Advertising (R. S. Sec. 3709)
5. War Powers Negotiation
6. Other Exemption from R. S. Sec. 3709
7. Miscellaneous
(See GSA Reg. No.
6

MPR PURCHASE ORDER

U.S. DEPARTMENT OF COMMERCE

Bureau Weather

Issued at: Washington, D. C.

This number must appear on all PACKAGES and PAPERS relating to this order.

Order No. W62-4029

Date February 1, 1962

Requisition No.	Submit Voucher to:	Appropriation Symbol and Title
Allotment See Page 2	Chief, U. S. Weather Bureau Washington 25, D. C. Attention: Fiscal Section	13X1412 See Page 2

Account Code	Org. Code	Project Code	Work Order No.	Station No.
	Met. Sat. Activities			

TO SELLER
National Aeronautics & Space Administration
Washington 25, D. C.

Consignee and Destination
SHIP TO
See below.

Invitation No. or Statute No.	Contract No.	Discount Terms	Time for Delivery

F. O. B. Point	Ship Via	Gov't. B/L No.

Item No.	Articles or Services	Quantity	Unit	Unit Price	Amount
	To reimburse the National Aeronautics and Space Administration for the following in accordance with the "Operating Plan-NOS" and the "Funding Agreement NASA-USWB" which are included as addenda to the "Agreement between the National Aeronautics and Space Administration and the Department of Commerce-U.S. Weather Bureau concerning Implementation of Nimbus Operational System" approved by the Administrator, NASA on January 10, 1962 and accepted by the Secretary of Commerce, January 18, 1962:				
	A. Spacecraft (two)				$20,000,000.00
	B. Launch vehicles (two), launch facilities, etc.				13,000,000.00
	C. Command and Data Acquisition stations				
	1. Fairbanks, Alaska				*5,840,000.00
	2. East Coast North American site				*6,260,000.00
	D. Technical management				570,000.00
	*Amounts shown for Items C.1 and C.2 each include $850,000.00 previously authorized by Letter of Intent No. 18/62 dated January 11, 1962 which letter is hereby cancelled.				
	Met. Sat. Lab.				

In connection with the performance of work under this contract, the *contractor agrees not to discriminate against any employee or applicant* for employment because of race, religion, color, or national origin. The *aforesaid provision shall include, but not be limited to, the following:* employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

PRICE INCLUDES COST OF TRANSPORTATION AND DELIVERY UNLESS OTHERWISE SPECIFIED.

TOTAL $45,670,000.00

Signature B. F. Loveless

Name

Title B. F. Loveless, Chief, Procurement & Supply Section

Historic purchase order issued by the Bureau

Operational Meteorological Satellite System

To Begin With Launching of First Nimbus

NOMSS, the National Operational Meteorological Satellite System, is being developed to provide continuous observations of worldwide meteorological conditions from spacecraft. The data obtained from the satellites will be processed and disseminated through facilities which are under development as part of the System. The first satellite of the NOMSS is the Nimbus spacecraft, tentatively scheduled for launching during the coming winter.

In September 1961, Congress named the Weather Bureau to establish and operate the System. Forty-eight million dollars were appropriated for this purpose.

To fulfill its responsibilities, the Weather Bureau, on January 10, 1962, formed a new organizational entity, the Meteorological Satellite Activities (MSA). MSA will manage the National Operational Meteorological Satellite System. The Meteorological Satellite Laboratory continues as the major research group within MSA.

Early in January, the Department of Commerce and the National Aeronautics and Space Administration signed an agreement outlining the responsibilities of each agency during the first phase of the Operational System.

Under this agreement, the Weather Bureau is responsible for: determination of the overall meteorological requirements; specification of quantities to be measured by the satellite meteorological instruments; processing of data for operational meteorological purposes; integration of data into weather analyses; use of data and analyses for forecasts; dissemination of data, analyses, and forecasts; archives (processing, storage, retrieval); and research and climatological use of data.

The National Aeronautics and Space Administration's responsibilities are: design, fabrication, and test of the spacecraft; procurement of the launch vehicle; maintenance of launch sites; construction of command and data acquisition stations; pre-launch preparation of spacecraft and vehicle; launch operations, including scheduling; tracking and orbit determination; programming and command to satellite; data recovery at command and data acquisition stations; and communication of data to Meteorological Satellite Activities organization.

In January, the Weather Bureau issued a reimbursable government order for $45,670,000 to the National Aeronautics and Space Administration, to be spent for spacecraft, launching vehicles, command and data acquisition sites, and technical management of NASA portions of the program.

Four research and development Nimbus satellites will be procured and launched by the National Aeronautics and Space Administration, using funds appropriated directly to that agency. In order to provide more continuous coverage for operational purposes, the funds transferred from the Weather Bureau to NASA will be used to procure and launch four operational Nimbus satellites. With eight spacecraft programmed for launching, it is hoped that at least one satellite should be in operation at all times during the first years of the project.

In developing the R&D spacecraft, NASA will be primarily concerned with sensor design; however, data from these satellites will be used operationally to the greatest possible extent. The operational spacecraft, funded by the Weather Bureau, will emphasize the use of the data in real time.

One operational command and data acquisition station will be constructed at Fairbanks, Alaska, adjacent to NASA's Nimbus R&D station. The R&D station has been completed; the operational station is in the planning and procurement stage. The second station is needed because the R&D station will later be used in connection with other NASA satellite programs and will not be able to handle the operational load. It will be used for operational data readout only in emergencies.

A second operational command and data acquisition station will be constructed in northeast North America. Although some procurement for this station has begun, no site has yet been selected. The station will not be completed until late 1963.

The Fairbanks station will be able to receive data from only 9 of the 14 daily orbits. The second station will be designed to acquire the remaining orbits. Both readout stations will be connected to Meteorological Satellite Activities and Goddard Space Flight Center by wide band communication channels.

Meteorological Satellite Activities is now located in a new wing of Federal Office Building No. 4 in Suitland, Maryland.

216 Million Calls to WE-1212 Establish New Record in 1961

The number of calls to WE-1212 installations climbed to a new all-time high in 1961. The weather number was dialed 216 million times during the year, an increase of 10 million over 1960.

Recorded weather forecasts, provided by telephone companies to those who dial the correct weather number, were available throughout the year in 11 U.S. cities. On December 22, the 12th such service began operation in Los Angeles.

New York City's total of 37,296,238 calls during the year was the highest for any city. The highest number of calls in any one day--477,148--was recorded at Washington, D.C., on January 26, after a provisional heavy snow warning had been issued.

City	Annual Total	Highest Day	Highest Date	Monthly Average	Daily Average
Baltimore	11,633,359	114,395	Sept. 19	969,447	31,872
Boston	8,097,845	129,861	Jan. 19	674,820	22,186
Chicago	20,913,362	200,866	Jan. 24	1,742,780	57,297
Cleveland	26,763,882	181,338	June 1	2,230,324	73,326
Detroit	32,009,799	193,859	Jan. 24	2,667,733	87,698
Milwaukee	14,727,343	136,710	Jan. 24	1,227,270	40,349
New York	37,296,238	412,103	Feb. 3	3,108,020	102,181
Philadelphia	16,639,662	192,455	Jan. 19	1,386,639	45,588
Pittsburgh	10,486,150	119,471	Feb. 3	873,846	28,729
San Francisco	5,333,226	70,738	June 14	444,436	14,612
Washington	32,546,074	477,148	Jan. 26	2,712,173	89,167
				11)	593,005
TOTAL.....216,446,940					53,910

TIROS IV In Orbit *(continued from page 23)*

on a television screen and recorded by a camera.

Specially trained teams of Weather Bureau and Air Force meteorologists analyze the pictures at the data acquisition stations. Nephanalyses, showing the location, type, amount, and distribution of clouds revealed by the satellite photographs are prepared. In preparing the nephanalyses, they must take into account the photographic distortion caused by the earth's curvature and by the oblique angles from which the photographs are taken.

The completed cloud analyses are often ready for transmission to the Meteorological Satellite Activities within two and one-half hours from the time the pictures were taken by the satellite. These analyses are sent to MSA in pictorial form by facsimile and in coded form by teletypewriter.

The analyses are disseminated throughout the world. By facsimile, they reach Weather Bureau, Air Force, and Navy weather stations in the United States. They are sent to U.S. installations in Africa, Alaska, Hawaii, and Antarctica by radiofacsimile. The coded analyses are sent by radioteletypewriter on international meteorological networks to weather stations abroad.

These programs for daily operational use of satellite data will be in full operation during the lifetime of TIROS IV. The successful international program for obtaining supporting observations, conducted during TIROS III, is being extended. Invitations for participation in this program have been sent to over 100 Meteorological Services around the world.

International Symposium On Humidity and Moisture Set for Spring of 1963

An International Symposium on Humidity and Moisture will be held in Washington, D.C., from May 20 to 23, 1963, under the sponsorship of the Weather Bureau, the National Bureau of Standards, the American Meteorological Society, the Instrument Society of America, and the American Society of Heating, Refrigerating, and Air Conditioning Engineers.

The symposium is designed to present the "state of the art" in measurement and control of humidity and moisture in the physical, engineering, agricultural, and biological sciences.

Weather Bureau representatives on the symposium's General Committee are Albert K. Showalter, Chief of the Observations and Station Facilities Division, and Dr. Lester Machta, Chief of the Meteorological Research Projects Branch of OMR. Dr. L.W. Foskett, of the Instrumental Engineering Division, and H. Dean Parry, of O&SF, are on the Program Committee.

Other Weather Bureau employees with committee assignments are Elza Lorimor (O&SF), Finance Committee; Benjamin F. Remington, Jr. (MRPB), Arrangements Committee; and James E. Caskey, Jr. (MRPB), Publications Committee.

Both invited and contributed papers will be presented at the symposium. All accepted proceedings papers will be published in book form. Those interested in presenting papers are invited to submit two copies of an abstract to Arnold Wexler, Chairman of the Program Committee, National Bureau of Standards, Washington 25, D.C.

Award-winning members of the Research Flight Facility

Commerce Honors Bureau Employees With Four Gold, Eight Silver Medals

At the Department of Commerce's Fourteenth Annual Awards Ceremony held February 14, 1962, in Washington, Secretary Luther H. Hodges presented four Gold and eight Silver Medals to Weather Bureau employees.

Gold Medals

The Department's highest award, the Gold Medal, is given to employees who have rendered exceptional service to the Department.

Research Flight Facility

A Gold Medal was awarded to 20 members of the Research Flight Facility for their outstanding contributions to the advancement of science.

The 20 men cited in the award are responsible for the meteorological aspects of RFF flights, collecting the data, and maintaining the equipment.

In the spring of 1961, the Research Flight Facility was based temporarily at Oklahoma City, gathering information on severe storms for the Bureau's National Severe Storms Project. After this assignment, the meteorological equipment aboard the planes had to be repaired and calibrated within a month and a half, to be ready for the hurricane season. This was a difficult job, involving many hours of extra work on nights, weekends, and holidays.

Throughout the hurricane season, the men made prolonged and repeated flights in extremely hazardous weather. They made six flights into Hurricane Carla in eight days. During Hurricane Esther, the Research Flight Facility investigated the storm and participated in seeding experiments on flights from San Juan. The data obtained from Carla and Esther contributed to the accuracy of warnings issued by the Bureau.

Members of the RFF cited in the award were:

Carl M. Reber, Chief, RFF
Ai Ernest Brown, Jr., Administrative Officer
Frank E. Christensen, Meteorologist
A.B. Arnett, Jr., Meteorologist (now with the Weather Bureau's National Severe Storms Project at Kansas City)
Harlan W. Davis, Meteorologist
Howard A. Friedman, Meteorologist

Isaac W. Richardson, Meteorologist
Arthur C. Gruenfelder, Electronic Engineer
Charles W.A. Travis, Engineering Technician
Walter L. Watts, Electronic Technician
Donald A. Bush, Electronic Technician
Robert L. Daniels, Electronic Technician
Fredric L. Darling, Electronic Technician (now at the National Meteorological Center in Suitland, Md.)
Stephen P. Fazekas, Electronic Technician
Raymond W. Gentry, Electronic Technician
Harry E. Pohl, Electronic Technician
John W. Taylor, Electronic Technician
William E. Hunt, Engineering Technician
Harold J. Gorby, Instrument Maker
James T. Netterville, Fuel Handling Specialist (recalled to active duty in the military service)

Vaughn D. Rockney

Vaughn D. Rockney, Chief of the Observations Section, Central Office, was presented a Gold Medal for his "major contribution to the administration of science and technology, including the development of improved techniques and instrumentation for the Weather Bureau's radar and upper-air observations programs, and for exceptional performance in directing operation of the Galveston, Texas, radar in the path of destructive Hurricane Carla in September 1961."

The success of the Bureau's radar program has been largely due to Mr. Rockney's efforts. During the middle 1950's, he was active in developing a program for use of converted military surplus radars in weather surveillance. At the same time, he was planning a Weather Bureau network of weather surveillance radars. This network of 31 radars will be completed in 1962, with the installation of two additional sets at Chicago and Catalina Island. Most of the features that make the Bureau's WSR-57's outstanding for meteorological and hydrological purposes were recommended originally by Mr. Rockney.

Mr. Rockney began his Weather Bureau career as an Observer at Devils Lake, North Dakota. He later served at Fargo, North Dakota; McGrath, Gambell, and Bethel, Alaska; and Chicago. In 1948, Mr. Rockney moved to the Central Office as a radar specialist. He became Chief of the Observations Section in 1956. He has been an active participant in many national and international radar committees.

Mr. Simpson

Mr. Rockney

Clyde Conner

W. Clyde Conner, District Forecaster at the New Orleans Weather Bureau Office, received a Gold Medal for "outstanding contributions as District Forecaster at New Orleans, with particular reference to exceptional performance in forecasting and issuing warnings for Hurricane Carla in September 1961."

During the onslaught of Hurricane Carla, Mr. Conner remained on duty almost continuously for many hours, issuing timely, accurate forecasts. Mass evacuation of the area because of the effective warnings has been credited with saving thousands of lives.

After entering the Bureau in 1942, Mr. Conner worked for a year at the Analysis Center in Washington, D.C. He was stationed at Brownsville, Texas, from 1943 to 1946, when he moved to New Orleans.

Three years ago Mr. Conner received the Department of Commerce Silver Medal in recognition of his valuable contributions to the public service.

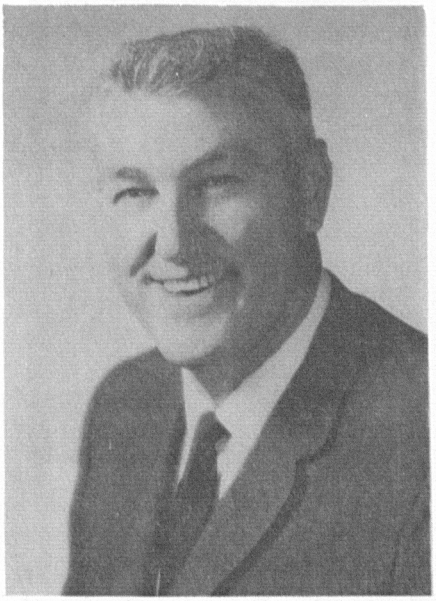
Robert H. Simpson

Robert H. Simpson, Deputy Director of the Office of Meteorological Research (Severe Storms), was awarded the Gold Medal for outstanding contributions to the scientific study of hurricanes.

Mr. Simpson organized, and now directs, the Weather Bureau's program of hurricane research. Under his leadership, the National Hurricane Research Project was started in 1955 to improve the forecasting and warning of hurricanes and to study the possibility of modifying these destructive storms. To gather data for the NHRP, the Weather Bureau developed its own fleet of research aircraft, now known as the Research Flight Facility.

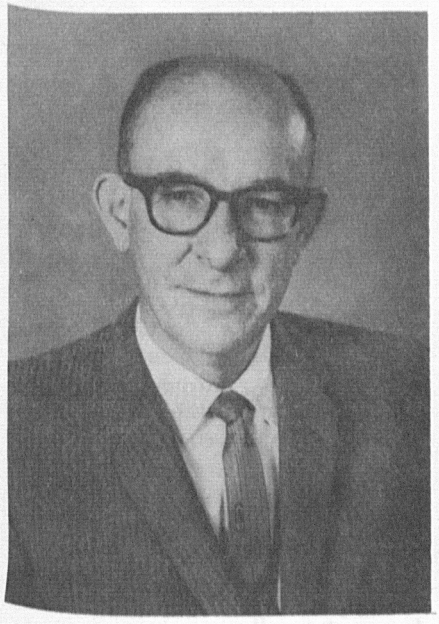
The New Orleans Forecast Center provided Mr. Simpson's first experience with hurricane forecasting. He was later stationed at Miami, and in 1947 his interest in hurricanes led him to plan and take part in a series of special hurricane research flights into the great hurricane of September which swept over Florida and Louisiana. As a result of these flights, and many more recent ones, he became interested in the idea of using aircraft for detailed study of hurricane cores.

Since coming to the Weather Bureau in 1940, Mr. Simpson has served at Brownsville, Texas; Swan Island, West Indies; New Orleans; Chicago; Miami; Honolulu; Washington, D.C.; and Palm Beach.



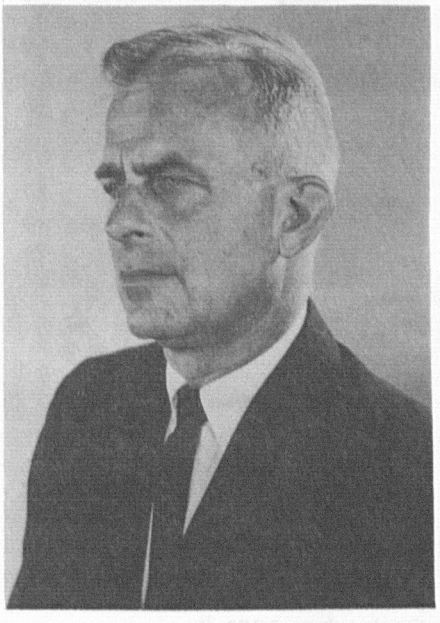
Mr. Conner

Mr. Simpson is a member of the American Meteorological Society, American Geophysical Union, Washington Academy of Science, and Pacific Science Association. He has written numerous articles which have been published in meteorological journals.

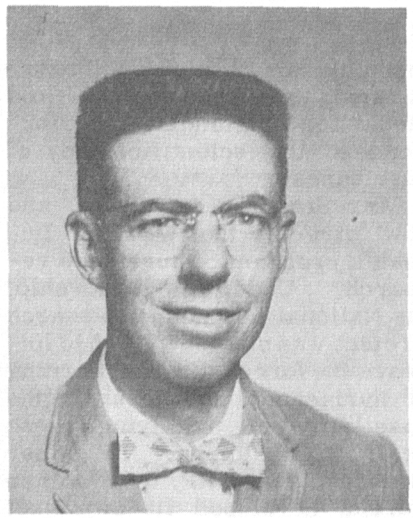


William E. Hiatt, Chief of the Hydrologic Services Division, Central Office, received a Silver Medal "for outstanding accomplishments in the field of river and flood forecasting and exceptional leadership as Chief of the Hydrologic Services Division."

Russell C. Grubb, Assistant Chief for Administration, Central Office, was cited "for valuable contributions to the public service through thirty - four years of sustained efficiency and devotion to duty, with particular reference to outstanding execution of duties as Assistant Chief of Bureau for Administration."



Philip F. Clapp, Supervisor of Research, Extended Forecast Branch, NMC, was cited for "extremely competent performance in carrying out highly important Weather Bureau assignments resulting in valuable contributions to the science of meteorology and for meritorious authorship in the field of extended forecasting."

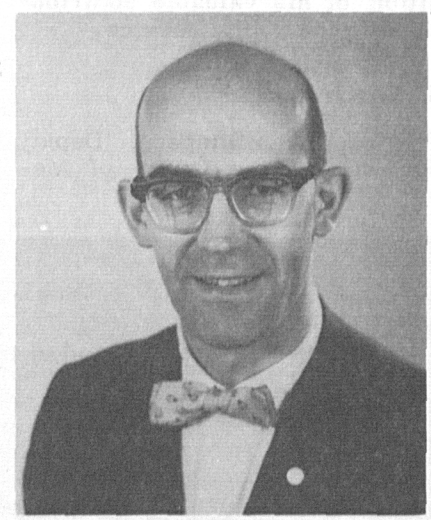


Melvin L. Fields, Meteorological Technician, Pacific Weather Patrol, San Francisco, was awarded a medal for "important contributions to the Weather Bureau's Ocean Weather Program, through extremely competent performance of duties and an outstanding record of dependability and resourcefulness, and for the excellent meteorological assistance provided to the National Academy of Sciences' MOHOLE Project."

Harold L. Crutcher, Meteorologist, Technical Advisory Staff, NWRC, received a medal for "valuable contributions to the science of meteorology and climatology, and for meritorious authorship in the field of upper-air climatology."

Ernest Carson, Meteorologist in Charge, Weather Bureau Office, Galveston, was awarded a Silver Medal "for outstanding public service at Galveston, Texas, during the approach and passage of Hurricane Carla in September 1961."

Walter P. Roquemore, Administrative Officer, Weather Bureau Regional Administrative Office, Fort Worth, was honored for "extremely competent performance over a long period of time, with particular reference to outstanding execution of duties as Administrative Officer in the Weather Bureau Regional Administrative Office at Fort Worth."



Robert F. Dale, Central Area Climatologist, Ames, Iowa, was honored "for valuable contributions to the science of climatology through sustained superior performance of duties for more than fifteen years, with particular reference to outstanding execution of duties as Central Area Climatologist at Ames, Iowa."

Bureau Meteorologists Present Many Papers At AMS Meeting

The American Meteorological Society held its 200th National Meeting and 42nd Annual Business Meeting in New York City from January 22 to 26.

Three Weather Bureau men served as Session Chairmen. Dr. Sigmund Fritz, Chief of the Meteorological Satellite Laboratory, chaired the Session on Interpretation of Meteorological Satellite Data. The Session on Engineering Aspects of Meteorological Satellite Measurements was led by David S. Johnson, Acting Director of the Meteorological Satellite Activities. Dr. Richard J. Reed, of NMC's Development Board, was Chairman of the Session on Synoptic Meteorology.

At the meeting, the following papers were presented by Weather Bureau scientists:

Kirby Hanson and Morton J. Rubin, Polar Meteorological Research Project: Heat exchange at the snow-air interface at the South Pole;

Roger A. Allen, Short Range Forecasting Research Project: Terminal weather forecast capability;

Gordon E. Dunn, Chief District Meteorologist, Miami: Hurricane prediction;

Joseph G. Galway, SELS, Kansas City: Severe local storms forecasting--its status today;

Donald L. Gilman, Extended Forecast Branch, NMC: The present status of long-range forecast practice;

Jerrold A. LaRue, Analysis and Forecast Branch, NMC: Forecasting quantitative precipitation by objective and semi-objective techniques;

Frederick G. Shuman, Numerical Weather Prediction Branch, NMC: Wind forecasts in the mid-troposphere;

Sigmund Fritz, Meteorological Satellite Activities: Current Weather Bureau research with meteorological satellite data;

D.T. Hilleary, Meteorological Satellite Activities: The design and development of a satellite infrared spectrometer (with Marc Dreyfus, of Barnes Engineering Company);

Richard J. Reed, National Meteorological Center: Temperature fluctuations in the equatorial stratospheric wind oscillation;

Banner I. Miller, National Hurricane Research Project: The momentum and energy balance of Hurricane Helene;

DeVer Colson, Clear Air Turbulence Research Project: The U.S. Weather Bureau Clear Air Turbulence research program;

Donald L. Gilman, Extended Forecast Branch, NMC: Forecasting the principal components of monthly temperature and precipitation;

David H. Slade, Environmental Meteorological Research Project: Atmospheric dispersion over the Chesapeake Bay;

N.F. Islitzer and R.K. Dumbauld, Idaho Falls: Atmospheric diffusion-deposition studies over flat terrain; and

Albert K. Showalter, Observations and Station Facilities Division: Surface weather measurements.

Morton J. Rubin, Polar Meteorology Research Project: Snow accumulation in central west Antarctica as related to atmospheric and topographic factors

AMS Elects Landsberg and Dunn At 42nd Annual Business Meeting

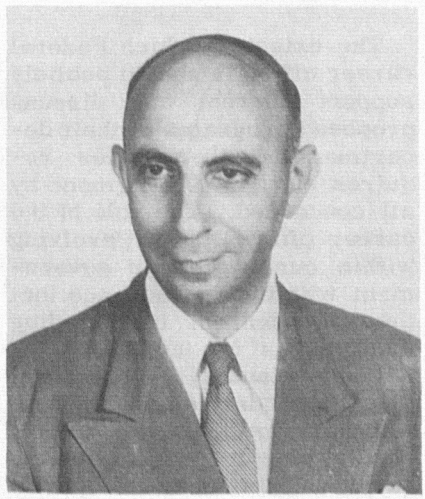
Two Weather Bureau men are among the new officers and councilors elected by the American Meteorological Society at its annual business meeting on January 24.

Dr. Helmut E. Landsberg, Director of the Office of Climatology, will serve as AMS Vice President for 1962-63.

Gordon E. Dunn, Chief District Meteorologist at Miami, was elected to a three-year term as councilor.

The newly elected President of the Society is Professor Morris Neiburger, Chairman of the Department of Meteorology at the University of California at Los Angeles. Professor James E. Miller, Chairman of New York University's Department of Meteorology and Oceanography, will fill the office of Secretary for a one-year term. Henry DeC. Ward was reelected Treasurer for 1962.

The councilors, in addition to Mr. Dunn, are: Dr. Patrick D. McTaggart - Cowan, Director, Meteorological Service of Canada; Dr. David Atlas, Chief, Weather Radar Branch, Geophysics Research Directorate, Air Force Cambridge Research Laboratories; Brig. Gen. Norman L. Peterson, Commander, Air Weather Service, U.S. Air Force; and Dr. Vincent J. Schaefer, Director of Research, Atmospheric Sciences Research Center, State University of New York.



Dr. Helmut E. Landsberg

Role of the Career Official In Support of Federal Programs

by John W. Macy, Jr., Chairman
U.S. Civil Service Commission

The extent to which Federal career officials should publicly support current and discuss proposed programs of their departments and agencies requires thoughtful judgment by all concerned. The role of the career official is still evolving within our system of government with the consequence that the precedent of longstanding tradition is not available. It is understandable, therefore, that uncertainty exists regarding the role the career official should play in program advocacy. This uncertainty has prompted requests from career officials, particularly in the field service, and from department and agency heads for guidance.

No definitive standard can be enunciated to define this role. Discretion and judgment must be applied by both Presidential appointees and career officials within the context of each problem as it arises. With this in mind it may be helpful, nevertheless, to consider the following guidelines:

1. Programs already authorized by law or Executive Order. When a Federal program is based on law or Executive Order, every career official has a positive obligation to make it function as efficiently and economically as possible and to support it as long as it is a part of recognized public policy. This means that a career official may properly make speeches explaining and interpreting a current program, identifying its public purposes, citing its achievements, defending it against uninformed or unjust criticisms, pointing out need for possible corrective action or soliciting views for improving it. The fact that the program was the subject of partisan controversy during the stages of enactment or development would in no sense lessen this obligation although the career official should exercise care in divorcing his remarks from a strictly political context.

2. Pending legislation. A more difficult decision is faced when new or changed programs are pending before Congress in the form of proposed legislation. Definitive statutory language prohibits the use of appropriated funds for "publicity or propaganda designed to support or defeat legislation pending before Congress." Such language clearly limits the career official's position on possible support of or opposition to new or amendatory legislation. Aware of these implications, however, the career official may explain the position of the Administration in the proposed legislation before interested public groups. Frequently, career officials are requested to testify on pending legislative proposals before Congressional committees. Presidential appointees should recognize potential political involvement in assigning responsibility for legislative testimony to career officials. In most instances, the career officials should be used to present factual or technical testimony with policy advocacy reserved for presentation by the Presidential appointeee.

A special circumstance arises when Congressional committees request the technical services of career officials to assist in drafting bills or reports. Even in politically controversial areas such an assignment is appropriate if it is understood that the career official is serving as a technical expert to assist in committee work under the direction of committee leadership.

Two New Journals Published by AMS

A new AMS periodical, the Journal of the Atmospheric Sciences, began publication in January.

The bimonthly journal, a continuation of the Journal of Meteorology, has been expanded in scope to include research related to the atmospheres of the earth and other planets and to interplanetary plasma.

The editors of the new journal are Dr. Robert Jastrow, Director of the Institute for Space Studies in New York, and Dr. Norman A. Phillips, of the Massachusetts Institute of Technology.

A second new AMS publication, the Journal of Applied Meteorology, is scheduled to appear on March 1. This journal will cover meteorological research that applies to safety, health, the economy, and the general wellbeing of the human community. Dr. Donald P. McIntyre, Chief of the Research and Training Division, Canadian Meteorological Service, and Robert D. Elliott, President of North American Weather Consultants, will serve as editors.

The American Meteorological Society will continue the remainder of its publications program in its existing form. These publications include: Meteorological and Geoastrophysical Abstracts, which covers current literature from more than 30 languages and over 100 countries; the Bulletin of the American Meteorological Society, devoted to editorials, surveys, and professional and membership news; Weatherwise, presenting current developments to the scientifically inclined layman and student; and Meteorological Monographs, which presents material too large in scope for the two scientific journals.

N. A. Lieurance Receives Award At AMS Dinner

Newton A. Lieurance, Director of the Bureau's Aviation Weather Services, received the Flight Safety Foundation Award of Merit at the annual dinner of the American Meteorological Society on January 24.

The award was presented on behalf of Aviation Week magazine by Jerome F. Lederer, Managing Director of the Flight Safety Foundation, Cornell Guggenheim Aviation Safety Center.

Mr. Lieurance was cited for "many contributions to the improvement of aviation weather forecasts."

"Equally important," the citation continued, "has been his accomplishment in providing pilots with improved methods for analyzing and translating weather hazards for flight operations. This was done through ingenious films and booklets developed by him during World War II and by his numerous lectures on weather designed for quick comprehension by the thousands of fortunate pilots who have been his audience. These along with articles in technical journals have contributed greatly to the pilot's understanding and interpretation of meteorology in connection with safe flight."

Federal News Clip Sheet To Be Sent All Stations

To provide all employees with up-to-date information about new Civil Service programs, services and plans, arrangements have been made for every station to receive a copy of the Federal News Clip Sheet, issued monthly by the Civil Service Commission. The Clip Sheet should be posted where all employees can read each month's issue.

Bureau Selects State Climatologists For New York, Maryland-Delaware

Dr. A. Boyd Pack has been selected to fill the newly established position of State Climatologist for New York. Dr. Pack has been State Climatologist for South Dakota and Meteorologist in Charge at Huron, South Dakota, since 1959. He had previously served as State Climatologist for Connecticut.

Dr. Pack holds a bachelor's degree from Brigham Young University, a master's degree from the University of Massachusetts, and a doctorate from North Carolina State College.

Before joining the Weather Bureau, Dr. Pack worked for the Department of Agriculture Soil Conservation Service at Salt Lake City and for the Connecticut Agricultural Experiment Station.

A. Delbert Peterson, the new State Climatologist for Maryland and Delaware, has been Principal Assistant at the Yakima, Washington, Weather Bureau Airport Station since January 1960. Mr. Peterson entered the Weather Bureau in 1940 and served at Spokane, Chicago, New York, and Salt Lake City. From 1953 to 1956, he was a staff meteorologist with Pan American Airways in Tokyo. Returning to the Bureau, he spent four years at the Office of Climatology in Suitland, Md., before his transfer to Spokane. Mr. Peterson attended Pacific University and graduated from the University of Chicago. He has also studied at the University of Utah and the University of Washington.

RETIREMENTS

Hazel G. Brown

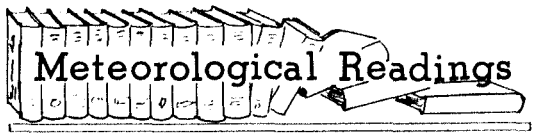
Miss Hazel G. Brown, an Administrative Assistant in the Central Office, retired on January 8, 1962, after almost 26 years of Government service. She began her career in the Government in 1936 as a Senior Typist with the Veterans Administration and transferred to the Weather Bureau a year later. Throughout her Bureau service, she worked in the Instrumental Engineering Division. Miss Brown lives at 3800 Fourteenth Street, N.W., Apartment 302, Washington 11, D.C.

Robert E. Freeman

Robert E. Freeman, a Meteorologist at Yuma, Arizona, retired on December 13, 1961. Mr. Freeman began his service with the Weather Bureau in 1945 as an Observer at Winslow, Arizona. He left the Bureau to attend Glendale College, San Diego State College, and the University of California at Los Angeles. In 1951, Mr. Freeman reentered the Bureau as a Meteorological Aid at Santa Maria, California. He later had assignments at Las Vegas and Honolulu. Mr. Freeman's address is 526 Glover Avenue, Chula Vista, California.

Oliver W. Hunn

Oliver W. Hunn, a Meteorological Technician at Houston, retired January 31, 1962, after 26 years' service. Mr. Hunn entered the Government in 1936 as an engineering aide in the Soil Conservation Service at New Philadelphia, Ohio. In 1943, he transferred to the Weather Bureau at Cincinnati, and later moved to Fort Worth, where he was a Hydroclimatic Inspector. Before his career in the Government, Mr. Hunn did civil engineering work on highway systems in Texas and Oklahoma. His retirement address is RFD 1, Box 64, Rhome, Texas.



Assignment No. LV: This article is primarily concerned with very bright cloud patches observed by TIROS I on May 16, 1960. These are discussed in relation to synoptic features, sferics, upper-level jet maxima, and particularly in regard to areas of severe weather activity. "Another view from TIROS I of a severe weather situation--May 16, 1960," Monthly Weather Review, Vol. 89, Number 11, November 1961.

QUESTIONNAIRE

Col. 61 According to this article, TIROS satellite pictures:

1. frequently show small-scale very bright patches
2. will always point out areas of pronounced sferics
3. are not as useful in the original transparency form for differentiating scales of brightness
4. can sometimes be of use in helping to differentiate between developing and decaying convective systems

Col. 62 The dark area more or less completely surrounding cloud mass B:

1. is a ring of low-level divergence
2. is due to a meso low
3. is caused by subsidence in the air surrounding the area of strong upward vertical motion
4. is not explicitly explained by the author

Col. 63 According to the author both the clouds over Oklahoma and the clouds over Arkansas (figure 2):

1. are of the cumuliform type
2. are suggestive of decaying cloud elements
3. are associated with frontal systems
4. are potential producers of severe weather

Col. 64 Mark all the correct statements:

1. several tornadoes were associated with cloud mass C after 2100 GMT.
2. sferics reports probably outline, in greater detail than the surface observations, those areas where rather vigorous convective activity was taking place.
3. the filmy and streaked character of the clouds over the eastern Great Lakes in figure 5 are suggestive of a cirriform type.
4. bright cloud systems A and B were better correlated with mesoscale systems than was C.

Col. 65 The primary objective of the upper-air streamline analyses was to:

1. verify the Beebe and Bates divergence models
2. substantiate the mesoscale analyses
3. delineate the positions and configurations of the low-level (5000 foot) and high - level (20,000 foot) jet streams in order to point up areas favorable for convective activity
4. account for bright cloud areas not associated with severe weather

Col. 66 Areas A, B, C in figures 3 and 4 appear as bright continuous cloud probably because:

1. these represent large areas of thick middle clouds
2. the TIROS photograph cannot pick out the fine detail
3. these represent anvil tops uniting and spreading out due to strong winds
4. of heavy cirrostratus formation ahead of cold front

Col. 67 In figure 9, Rantoul, Illinois, lies in a dark portion of the TIROS picture, yet it reported considerable cloudiness at time picture was taken. This discrepancy is very likely due to:

1. error in observational timing
2. low albedo of clouds over the station
3. polarization of light reflected from the clouds at that particular angle
4. slight misadjustment in the rectification of the TIROS picture

Col. 68 Mark the correct statements:

1. unless cirrus type clouds are dense the TIROS camera does not usually record them
2. the cloud street over extreme north central Texas can be readily explained by the Kuettner theory
3. a nephanalysis is an analysis of cloud types and amounts
4. rocket observations indicate cloud streets are almost always perpendicular to the vertical shear

Col. 69 Although these TIROS observations seem to support the Haurwitz theory for the formation of "cloud streets," the wavelength of the observed streets was greater than one would predict. This is probably due to:

1. the wind shear vector being incorrectly aligned with respect to the inversion
2. the great vertical development of some cumulus cells suppressed the growth of others in between
3. suppression caused by heating aloft
4. the natural enhancement of every fourth street

Col. 70 Equation (1) on page 459:

1. states that maximum wavelength of cloud streets depends on the vertical depth of the inversion layer
2. takes into account the difference in lapse rates above and below the inversion
3. is derived under the assumption that the wind is parallel to the cloud streets
4. theoretically predicts wave-length of cloud streets only when the streets are perpendicular to the wind shear across the internal boundary surface

Dr. Gifford Chosen As 1962 Chairman Of AEC Committee

Dr. Franklin A. Gifford, Jr., Meteorologist in Charge of the Weather Bureau Research Station at Oak Ridge, Tennessee, has been elected Chairman of the Atomic Energy Commission's Advisory Committee on Reactor Safeguards. Dr. Gifford's one-year term as Chairman began on January 1.

Dr. Gifford has a B.S. in meteorology from New York University and received his M.S. and Ph.D. from Pennsylvania State University. He served for three years as a meteorologist with the U.S. Army Air Corps during World War II.

Since he joined the Weather Bureau in 1950, Dr. Gifford has directed studies of atmospheric turbulence and diffusion, structure of the lower atmosphere, and planetary atmospheres, and has represented the United States at internatonal symposia on atmospheric diffusion and air pollution.

Bureau Meteorologists Attend Oregon State

Five Weather Bureau meteorologists are studying at Oregon State University during the winter and spring terms of 1962. The special course, arranged by Professor Fred W. Decker of the University's Physics Department, includes training in advanced synoptic meteorology, physical and dynamic meteorology, radar meteorology, and mesometeorology. Attending are: Francis D. Beers, Supervisory Fire Weather Meteorologist, Portland, Oregon; Robert Kirkpatrick, Meteorologist in Charge, Salem, Oregon; John M. Lanning, Supervisory Fire Weather Meteorologist, San Francisco; W.R. Krumm, Western Fire Weather Coordinator, Missoula, Montana; and Henry U. Lawrence, Aviation Forecaster, Boston.

DEATHS

Wilfred W. Figgie

Wilfred W. Figgie, a Meteorological Technician at the La Crosse, Wisconsin, Weather Bureau Airport Station, died February 8, 1962. Mr. Figgie entered on duty in the Weather Bureau in April 1942 at La Crosse as an Airway Observer and served continuously at that station until his death. He is survived by a son, Richard, who lives at 2063 Coral Lane, St. Paul 11, Minnesota.

Dr. Charles S. Gilman

Dr. Charles S. Gilman, who served the Weather Bureau for 23 years before accepting a WMO assignment in 1960, was killed January 22, 1962, when a plane carrying him and three others crashed into Lake O'Higgins in the Chilean Andes. The pilot and Dr. Gilman lost their lives when the front part of the aircraft sank in the lake, but the two others were thrown clear and survived with serious injuries.

Dr. Gilman came to the Weather Bureau in 1937 as an Observer in Little Rock. Later assignments took him to Pittsburgh; Huntington, W. Va.; Boston; San Juan; Miami; and Washington, D.C., where he was Chief of the Hydrometeorological Section. Surviving are his wife, Evelyn, and a son, Charles, Jr., 10.

William E. Johnston

William E. Johnston, a Radar Meteorological Technician at the Charleston, S.C., WBAS, died February 8, 1962. Mr. Johnston joined the Weather Bureau in 1956 at Indianapolis, with succeeding assignments in San Juan, Puerto Rico, and Charleston, South Carolina. He is survived by his wife, Sylvia, and a son, Edward M., who live at Midland Park Terrace, Rt. 2, Charleston Heights, S.C.

Howard P. Page

Howard P. Page, a Meteorological Technician at the Las Vegas Weather Bureau Airport Station, died on January 13. Mr. Page had served at the Las Vegas station since he entered the Weather Bureau in 1946. Before coming to the Bureau, he was a weather observer in the Army Air Corps. Mr. Page is survived by his wife, Margaret E. Page, of 801 Glendale Avenue, North Las Vegas.

Leslie Smith

Leslie Smith, Director of the San Francisco WRPC, died February 3, 1962, in Fort Worth, where he had been attending the Southwest Area State Climatologists Meeting. Mr. Smith first came to the Weather Bureau in 1918 as an Assistant Observer in New Orleans, and served until 1921, when he entered private industry. Mr. Smith came back to the Bureau in 1936 when he led a W.P.A. project in New Orleans, developing methods for using punched cards in handling climatological data. Later, Mr. Smith was head of the New Orleans Auxiliary Tabulation Unit. As director of the NWRC in New Orleans, he supervised its transfer to Asheville in 1952. In 1958 Mr. Smith was transferred to the Office of Climatology in Washington. Mr. Smith attended Tulane and Loyola Universities, majoring in statistical courses. He is survived by his wife, Doris; a son, Fred; a brother, James A. Smith; and three grandchildren, all of whom live in New Orleans.

Henry C. Winburn

Henry C. Winburn, Meteorologist in Charge of the Weather Bureau Airport Station at Amarillo, died on January 8. Mr. Winburn entered the Weather Bureau in 1928 at Lincoln, Nebraska, and served at Rapid City, South Dakota, and Houston, Texas, before moving to Amarillo in 1941. He had attended the University of Nebraska, the University of Houston, the Amarillo Center of West Texas State College, and the University of Miami. Mr. Winburn is survived by his wife, Frances K. Winburn; a daughter, Kathy Lou; and a son, Clifford, Jr., of 4104 Cimarron, Amarillo, Texas.

Welcome to the Weather Bureau

Cary D. Allred, Electronic Maintenance Technician, Salt Lake City
Vernon L. Baldwin, Jr., Meteorological Technician, Waco, Texas
Robert Adams Barnsley, Meteorological Technician, Central Office
Ray N. Bethune, Meteorologist, Mobile
Franklin L. Bowen, Meteorological Technician, Burrwood, La.
Earl Roland Brees, Jr., Statistical Clerk, Central Office
Doris B. Brown, Mail and File Clerk, Anchorage
Pauline O. Brown, Clerk-Typist, Central Office
Virginia L. Bunton, Clerk-Stenographer, Weslaco, Texas
George N. Collymore, Meteorological Technician, New York
Terence F. Conlon, Meteorological Technician, Sault Ste. Marie
Garland B. Craft, EAM Project Planner, Asheville
Frank E. Dahlmann, Meteorological Technician, Central Office
Clifford J. Dow, Meteorological Technician, Meacham, Ore.
James K. Dudley, Meteorological Technician, Waco
Maryjane Fisher, Meteorological Technician, Anchorage
James S. Fling, Meteorologist, Brownsville
Roy S. Frost, Construction and Maintenance Representative, Fort Worth
Charles M. Frounfelkner, Meteorological Technician, Cordova
Clifford J. Gaynor, Meteorological Technician, San Francisco
Donald L. Gore, Meteorological Technician, Jackson, Miss.
Thomas A. Grunzinger, Meteorologist, St. Louis
George R. Lipka, Meteorological Technician, Detroit
David A. MacFarlane, Meteorological Technician, Fairbanks
Herbert C. Mackey, Meteorological Technician, Anchorage
Frank Makosky, Meteorologist, Central Office
Vincent J. Maloney, Meteorological Technician, Central Office
Evelyn Maretsky, Secretary, New York
George E. Maskell, Accounting and Fiscal Clerk, Central Office
Harry A. McClellan, Electronic Technician, Norfolk
Robert L. McEwen, Meteorological Technician, Central Office
Betty Jane McLean, Accounting and Fiscal Clerk, Central Office
Willie L. Metrejon, Electronic Maintenance Technician, Lake Charles
William A. Morgan, Engineering Technician, Central Office
Charles Edward Moshier, Meteorological Technician, Fairbanks
Alice May Moss, Clerk, Central Office
Charles L. Nichol, General Supply Clerk, Fort Worth
Clarence W. Nolte, Meteorological Technician, Wichita Falls
Laetitia Irene Norton, Budget Analyst, Central Office
Robert Petrosky, Meteorological Technician, Philadelphia
Paul E. Pettit, Meteorological Technician, Burrwood, La.
Ralph C. Pike, Meteorological Technician, Brownsville
Charles H. Price, Meteorological Technician, Central Office
Will Ray Price, Jr., Electronic Technician, Central Office
Milo J. Radulovich, Meteorologist, Providence
Lawrence C. Raniere, Meteorologist, New Brunswick, N.J.
Roy Rawls, Meteorological Technician, Raleigh
Eckwood H. Reagan, Meteorologist, Hartford
William R. Reed, Electronic Maintenance Technician, Missoula
Dee R. Reese, General Supply Clerk, Salt Lake City
David L. Reeves, Meteorologist, Louisville
Searl E. Richards, Meteorological Technician, Amarillo
Hugh Brannon Riley, Meteorological Technician, Central Office
Orvil L. Robinson, Meteorological Technician, Kotzebue
Percy E. Rogerson, Meteorologist, Wilmington, N.C.
Ralph R. Rudolph, Meteorological Technician, Nantucket
Harvey S. Sands, Meteorologist, New York
Harry E. Sarvis, Meteorological Technician, Norfolk
Elmer P. Scalet, Meteorologist, San Francisco
Woodward W. Schafer, Electronic Technician, Pittsburgh
Wilbert T. Schnitker, Meteorological Technician, Wichita Falls
Robert E. Schroeder, Electronic Maintenance Technician, Kansas City
Walter A. Schulz, Jr., Meteorological Technician, New Orleans
Harold William Searby, Meteorologist, Anchorage
Mamoru Shibata, Electronic Maintenance Technician, Wake Island
Dale Sirmans, Electronic Maintenance Technician, Miami
James N. Stamm, Meteorological Technician, Tampa
William F. Strojie, Meteorological Technician, Central Office
Charles B. Stwertnik, Meteorological Technician, Des Moines
Demetri Suk, Meteorological Technician, Central Office
Doyt Howell Trail, Construction and Maintenance Representative, Kansas City
Joseph L. Tyson, Meteorological Technician, Central Office
Cecil K. Vandegrift, Sr., Electronic Technician, Wilmington, N.C.
Arnel C. Warren, Meteorological Technician, Tampa
Jack A. Williams, Meteorological Technician, Wichita Falls
Martha Marie Wyer, Clerk-Dictating Machine Transcriber, Central Office

Transfers

	From	To
Merlin R. Ahrens	Tampa	Central Office
Bruce O. Barnes	North Platte	Kahului, Hawaii
Earl M. Bates	Walla Walla	Portland, Ore.
Donald R. Billman	Anchorage	Fairbanks
LeRoy W. Borg	Yakutat	Bethel, Alaska
Frank L. Branom	Evansville	St. Louis
Marjorie M. Bristow	Fort Worth	Anchorage
Willard A. Brownlee	Rochester	Atlantic City
Kenneth E. Bryan	St. Louis	Tulsa
Edward W. Burt	Cincinnati	Atlantic City
Charles H. Carpenter	Port Arthur	Brownsville
Beryl W. Chisun	Midland	Wallops Island
Edward R. Cole, Jr.	Cordova	Anchorage
Norman Courchesne	Eniwetok	San Francisco
Vincent J. Creasi	Central Office	San Juan
Billy R. Curry	Wichita Falls	Memphis
Douglas S. Davis	Barrow	Cold Bay, Alaska
Jack L. Dielkey	San Francisco	Antarctica
Frank A. Dillenkoffer, Jr.	Charleston, S.C.	New Orleans
Donald A. Downey	Bismarck	Kaiser, Arkansas
Herbert C. Drechsler	Honolulu	Kahului, Hawaii
Robert Joe Eckdale	Cold Bay	Yakutat, Alaska
Elden R. Etier	Silver City	Fort Huachuca
Henry G. Favrot	Central Office	Kansas City
Charles R. Fischer	Bismarck	Honolulu
Elizabeth M. Fretwell	Roseburg, Ore.	Kahului, Hawaii
Elton M. Gard	Kansas City	Alpena
Glade H. Gerber	Point Arguello	Salt Lake City
Lloyd W. Graybill	Sacramento	Boise
William C. Gregory	Tampa	Meridian, Miss.
Sarah M. Grimes	Washington, D.C.	Miami
Benjamin A. Halstad	Resolute Bay, NWT	Las Vegas
Charles B. Howard	Memphis	Lake Charles
Fred R. Kelly	Winnemucca	Eniwetok
David R. Lamb	Fort Huachuca	San Francisco
John Joseph Langendoerfer	Los Angeles	Sterling, Va.
Charles E. Liddick, Jr.	Buffalo	Wallops Island
Leroy E. Martell	Anchorage	Kotzebue, Alaska
Joseph R. Martin	Cold Bay	Nome, Alaska
Arthur H. Mason	Asheville	Tampa
Isom E. Medford	San Antonio	Houston
Daniel A. Meyers	Chicago	Cold Bay, Alaska
William E. Muldoon	Boston	Antarctica
Donnie Joe Musgrove	Asheville	Cordova, Alaska
Thomas G. Nastos	San Francisco	Antarctica
Creighton B. Nelson	Minneapolis	Twin Falls, Idaho
Oliver H. Newton	Brownsville	Stoneville, Miss.
George Y. Okoji	Eniwetok	Kwajalein
John P. Osborne	Detroit	Missoula
Ryosei Oshiro	Kwajalein	Honolulu
Cecil M. Palmer	Wilmington, N.C.	Memphis
Lester M. Palmer	Buffalo	Kahului, Hawaii
Jacquelyn M. Paulson	Bethel	McGrath, Alaska
Paul Saul Peter	Ponape	Truk
A. Delbert Peterson	Yakima	Baltimore
Robert W. Preshong	Eniwetok	Fort Huachuca
Frederick A. Price	Lihue, Kauai	Point Arguello
Robert W. Pridgin, Jr.	Asheville	Barrow, Alaska
Robert J. Richard	Fairbanks	McGrath, Alaska
John A. Rimkunas, Jr.	New York	Hartford
James L. Ripps	Kansas City	Fort Worth
David Ronaldson	Fairbanks	Cold Bay, Alaska
Michael F. Ryba, Jr.	Resolute Bay	Dodge City
Ernesto J. Salas	Cordova	Bethel, Alaska
Eugene Salerno	Chicago	New York
Laverne L. Sandy	Oklahoma City	Kansas City
Frederick W. Schaefer	Norfolk	Boston
James H. Schulze	Johnston Island	La Crosse, Wis.
Kenneth B. Seal	Great Falls	Walla Walla
James E. Sheppard	San Francisco	Los Angeles
Dawaine A. Shoemaker	Kotzebue	Yakutat, Alaska
James R. Sides	Kansas City	Omaha
Wallace R. Sigler	Honolulu	Kahului, Hawaii
Anthony M. Smith	Huntsville, Ala.	Silver City, N. Mex.
Hurtis Smith	New Orleans	Washington, D.C.
Robert L. Stalnaker, Jr.	Central Office	Brownsville
William J. Taliaferro	Ponape	Kahului, Hawaii
Barna J. Tost	Kansas City	Evansville
Bernard A. Utic	Green Bay	Duluth
Ceel Van Den Brink	Des Moines	East Lansing
Richard A. Wood	Washington, D.C.	Midland

Length of Service Awards

35-Year Awards

Edward M. Vernon,
F&SR, Central Office
Oliver R. Wulf,
WBO, Los Angeles

25-Year Awards

Paul A. Arnerich,
PWP, San Francisco
William H. Brown,
NMC, Central Office
Peter F. Gordon,
WBAS, New York
William E. Hiatt,
Hydro., Central Office
Ernestine G. Scott,
MR, Central Office

20-Year Awards

Marie P. Barber,
Adm. Ops., Central Office
Nathan M. Barrey,
WBAS, Cincinnati
Robert A. Collins,
WBAS, Albany
Charles M. Crouch,
WBAS, Fort Worth
William A. Drebert,
WBAS, Boston
Samuel O. Grimm, Jr.,
WBAS, New York
Reynolds C. Hilley,
Macon, Georgia
Robert K. Hood,
WRPC, San Francisco
Philip Larch,
WBAS, Medford, Ore.
James E. Lunney,
WBAS, El Paso
Dorothy D. Martin,
Adm. Ops., Central Office
Robert M. McBride,
WRPC, Chattanooga
Roy M. McCarter,
NMC, Central Office
Ruth R. Mikelson,
WRPC, San Francisco
Omer E. Murray,
Factory Inspection Unit,
Philadelphia
Luther A. Olson,
Inst., Central Office
Martin N. Rosenblatt,
OIMP, Central Office
Charles H. Ryland,
WBAS, Pittsburgh
Harlan K. Saylor,
NMC, Central Office
Clyde P. Thomas,
WBAS, Wilmington, N.C.
Lucile F. Vaughn,
F&SR, Central Office
Myrtle L. Wentz,
B&M, Central Office
Daisy L. Wilson,
WBAS, Little Rock
Lorenzo D. Wirt,
WBAS, Amarillo
David I. Wise,
WBAS, Santa Maria

15-Year Awards

Robert E. Cardinal,
WBAS, Duluth
Howard T. Ellis,
Mauna Loa Observatory
Edward F. Falkowski,
WBAS, Flint
David M. Fehling,
WBAS, Seattle (Sea-Tac)
Ronald C. Gerald,
WBAS, International Falls
Helen T. Hagemeyer,
B&M, Central Office
Neil J. Ingram,
WBAS, Canton Island
Everett D. Jones,
WBAS, Sioux Falls, S. Dak.
Simon I. Kaufman,
NMC, Central Office
Blanche Lanier,
Adm. Ops., Central Office
Aran Markarian,
WBAS, San Francisco
John F. Michaels,
WBAS, Albuquerque
Clair D. Mills,
DMO, Kansas City
Robert E. Nelson,
WBO, Lincoln, Nebr.
John R. Sloan,
WBAS, Rochester, Minn.
DeVon B. Smith,
WBO, Sacramento
Donn G. Thompson,
WBAS, Goodland, Kans.

Personnel Officers Confer in CO

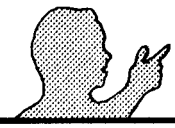
The second annual meeting of Weather Bureau Personnel Officers was held in Washington during the week of January 22, 1962. The conference theme was "Gearing Up for Tomorrow's Needs."

Attending the meeting were Personnel Officers from the Regional Administrative Offices, the National Weather Records Center, and the Pacific Supervisory Office.

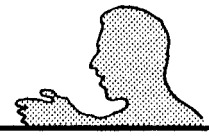
The group was addressed by the Chief, Deputy Chief and Assistant Chiefs of Bureau, and by the Director of Aviation Weather Services.

Top officials and assistants in the Personnel Management Division led discussions of the Bureau's personnel management requirements.

Particular emphasis was given to new procedures resulting from the recent delegation of greater authority to field Personnel Officers.



Forecasters' Forum



(NOTE: As discussed in TOPICS for January, 1960, Forecasters' Forum is included in TOPICS because of administrative reasons where formerly it was a separate publication. It still remains a function of the F&SR Division and editorial control of Forecasters' Forum rests with that Division. Contributions and comments regarding this department should be addressed accordingly.)

Comments on Forecast Terminology—Probability [1]

There is little question today that meteorology is once again advancing and at a rapid rate. The "art" of forecasting is gradually being replaced by scientific methods, although it is likely that art will remain a part of forecasting for some time to come and perhaps never be completely removed. The technique of forecasting flow patterns has undergone drastic change in the past few years, and equivalent changes in the forecasting of weather parameters are likely to come in the near future.

Along with the reduction of art and increase in science in making the forecast, why not a similar change in the communication of that forecast--in the way the forecast is expressed? Take the precipitation forecast for example. I doubt that there is an experienced forecaster who has not had himself or his group chided for a forecast that was basically correct but was misunderstood by the user because of imperfect (or incomplete) communication. The "scattered shower" problem is a prime example, as indicated in the Forecasters' Forum in the December 1959 issue of TOPICS.

In general, the words used in precipitation forecasts are not well defined and are not well understood by the user of the forecast. Even the forecasters are not in complete agreement on the meaning of certain of these words. Part of becoming scientific is having clear definitions for things so that misunderstanding is reduced to a minimum. I feel strongly that much of the misunderstanding of our precipitation forecasts could be removed by the use of numbers instead of or in addition to the words normally used. "Probability" forecasts are of this nature. Let us look at this type of forecast as related to the forecasting of the occurrence of precipitation.

1. What are probability forecasts?

If the weather conditions at some instant were known completely, and if the laws relating these conditions to future conditions were also known completely and could be applied perfectly, then there would be no need for probability forecasts as we could forecast with complete certainty. Such perfection does not exist. Instead, there are varying degrees of certainty, depending on the complexity of the situation, etc. A forecast that includes the degree of certainty as a number is called a "probability forecast." The number can be thought of as the degree of certainty (or confidence) of the forecaster that the forecast event will occur.

2. How does probability forecasting differ from the present system of forecasting?

The forecaster is aware of varying degrees of certainty and can forecast varying degrees of certainty, for he is sometimes rather sure that it will rain, sometimes rather sure it will not. This is reflected in the fact that precipitation forecasts issued by the Weather Bureau are already somewhat probabilistic in nature, in that the degree of certainty is crudely expressed by qualifying words[2] such as "chance" and "likely." Probability forecasts using numbers are thus not greatly different from present forecasts, the difference being almost wholly in the manner and degree with which the certainty is expressed.

3. Can a forecaster make this type of forecast without objective aids to guide him?

It has been done[3] and is now being done by some Weather Bureau offices and other meteorological groups.

The impression one gets from the meteorological literature is that such aids are good for inexperienced forecasters but that experienced forecasters generally are helped but little. The consensus appears to be that the making of probability forecasts need not wait until objective aids are obtained.

4. Why make probability forecasts?

The main advantage is the increased understanding of the forecast by its user, and the resulting reduction in the type of criticism of the Bureau that stems from imperfect understanding of the forecast. There is also a gain in the economic utility of the forecasts for those users who know or will learn how to make full use of such forecasts.

It is rather obvious that the preciseness of probability numbers will allow more precise

verification. This in turn will allow better evaluation of individual systematic error (personal bias). Such verifications show that forecasters are generally overconfident of their ability to forecast both rain and fair, i.e., their forecast probabilities of more than about 50 percent are too high and those of less than about 50 percent are too low. It has been shown that forecasters can reduce their systematic error, once it is known.

On the other hand, mere removal of the bias is not sufficient, for this could be done simply by always forecasting the climatological probability. Such forecasts, however, would have no economic utility compared to climatology. The forecasts would be perfectly reliable but would completely lack resolution. What is needed is for forecasts to retain a high degree of reliability but still have a reasonable amount of resolution. This can be done.

5. Should the probability value apply to an area or to a point?

For some aviation uses, the area probability of some event, thundershowers, for instance, might be helpful. This is because of the mobility of the user of the forecast. But for practically all public forecasts the Bureau issues, the point probability is much more appropriate (verification is then for a single preselected reporting station). This is so since practically all weather-dependent operations, especially in urban areas, are confined to a very restricted area--a point. For example, "Should I hang out laundry today?" "Should I water my lawn?" "Can I safely pour concrete?" The point probability may be equal to, but is generally lower than, the area probability.

6. How should the forecast be expressed when numerical probability is included?

Experience has been too limited to make a final statement, but present thinking is that the probability information should be appended to a forecast which is stated in the usual fashion, and the appendage is best in the form "chance of rain 80 percent today, 60 percent tonight," etc. Weather Bureau experience in San Francisco has indicated that this form will eliminate most of the confusion that can occur.

It seems that probability values of 0, 10%, 20%, etc., and perhaps also including 5%, provide an adequate resolution for the state of the forecasting art. Use of only these values simplifies verification and makes more meaningful verification graphs of the forecast probability against average frequency of occurrence.

Some may not feel it important to include the very low probability values in a forecast, but maximum economic gain from the forecasts is likely to come from the use of low probability values.

In conclusion I would like to quote Brier[4] who, using the language of the philosopher, nicely states the case for probability forecasting as follows: "The decisions of a rational man will to a large extent depend upon his estimates of the probabilities of the different events and the consequences of them. When he is convinced that the weather forecaster's estimates of these probabilities are better than his own, he will come to him for weather information."

Lawrence A. Hughes
WBFC, Chicago, Illinois

[1]This is an extension of the comments in the Forecasters' Forum in the April 1960 TOPICS

[2]See Weather Bureau Manual, Vol. III-B-5622

[3]See TOPICS, August 1958, p. 149

[4]Brier, G.W., "Verification of a Forecaster's Confidence and the Use of Probability Statements in Weather Forecasting," U.S.W.B. Research Paper No. 16

Suggested Additional Readings

1. Brier, G.W.: "Verification of Forecasts Expressed in Terms of Probability," Mon. Wea. Rev., Jan. 1950.

2. Brier, G.W.: "The Effect of Errors in Estimating the Probabilities on the Usefulness of Probability Forecasts," Bull. Amer. Meteor. Soc., Feb. 1957, pp. 76-78.

3. Williams, P.W., Jr.: "The Use of Confidence Factors in Forecasting," Bull. Amer. Meteor. Soc., Oct. 1951.

4. Thompson, J.C.: "On the Operational Deficiencies in Categorical Weather Forecasts," Bull. Amer. Meteor. Soc., June 1952.

5. Thompson, J.C. and Brier, G.W.: "The Economic Utility of Weather Forecasts," Mon. Wea. Rev., Nov. 1955.

6. Thompson, J.C.: "The Snowfall Probability Factor," Amer. City Mag., Dec. 1959 (distributed to all first-order W.B. stations with C.O. memo, January 29, 1960).

Superior Performance Awards

Sherman Brewster,
NWRC, Asheville
Eugene Brown,
Central Office
Wilburn Cobb,
WBAS, Huntsville
Douglas Davis,
WBAS, Barrow
James Denaro,
WBO, New York
Frederick Fauntleroy,
Central Office
Jordan Fischler,
Central Office
Aran Markarian,
WBAS, San Francisco
John McIntyre,
Central Office
William Meyers,
RFC, Cincinnati
Luther Olson,
Central Office
Ansel Page, Jr.,
Central Office

GROUP AWARD:
John C. Hagan)
Francis V. Kohl) Central Office

CONTENTS

Topigrams	22
TIROS IV Launched	23
U.S. and Canada Cooperate in Ice Reconnaissance	23
NOMSS To Begin with First Nimbus Satellite	24-25
WE-1212 Calls Set New Record in 1961	26
Humidity Symposium To Be Held in 1963	26
Bureau Employees Receive Commerce Awards	27-30
AMS Meets in New York	31
New AMS Officers Elected	31
Career Officials' Role in Support of Federal Programs	32
New AMS Publications Announced	32
N.A. Lieurance Honored by Flight Safety Foundation	33
New State Climatologists Selected	33
Federal News Clip Sheet Available at All Stations	33
Retirements	33
Meteorological Readings	34
Dr. Gifford Is Chairman of AEC Committee	35
Bureau Men Attend Special Course at Oregon State	35
Deaths	35
Welcome to the Weather Bureau	36
Transfers	36
Length of Service Awards	37
Personnel Officers Meet in Central Office	37
Forecasters' Forum	38-39
Superior Performance Awards	39

On the cover: Thor Delta vehicle is readied for launching TIROS IV. A NASA photograph.

WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.

S. DEPARTMENT OF COMMERCE
VEATHER BUREAU
olume 21 MARCH 1962

Weather Bureau

TOPICS

BRARY
5 1962
BUREAU

STORY OF A FLOOD page 47

Topigrams

Washington, D.C.
March, 1962

Since its launching on February 8, TIROS IV has taken about 12,000 cloud photographs from which more than 250 nephanalyses have been prepared. Thirty-five special advisories have been dispatched: two to the Malagasy Republic; two to Mauritius; five to Melbourne, Australia; seven to Wellington, New Zealand; one to Tokyo; one to Weather Bureau offices at Seattle, San Francisco, Los Angeles, and Honolulu; and seventeen to U.S. Air Force installations in Hawaii, Japan, and Guam.

On April 15, the Weather Bureau began international radiofacsimile transmission of TIROS nephanalyses and all material normally carried on the High-Altitude Facsimile Network. With compatible receiving equipment, users in Europe, South America, Africa, the Far East, and the Southwest Pacific can receive the maps. The experimental broadcasts will continue for eight to ten weeks.

The routine processing of climatological records, now performed at the WRPC's in Chattanooga, Kansas City, and San Francisco, will be moved to the National Weather Records Center in Asheville. Substation management functions of the WRPC's will be transferred to the Regional Administrative Offices. The consolidation, which will take place over a period of approximately two years, will increase operating efficiency by making use of the high-speed data processing facilities available at the NWRC. Every effort will be made to reassign the WRPC employees to suitable positions at Asheville or other Bureau installations. An article on the planned consolidation will appear in the next issue of TOPICS.

In connection with the planned resumption of nuclear testing in the Pacific, Robert J. List and Gilbert J. Ferber, of the Meteorological Research Projects Branch, are at Christmas Island to assist in predicting fallout. Radiological monitoring equipment is being installed at Bureau stations on Canton, Wake, Majuro, and Kwajalein islands. On March 10, the Hilo, Lihue, Wake, Canton, and Kwajalein stations began taking four daily rawinsonde observations, instead of the normal two a day; Majuro increased from one to four daily; and Ponape and Truk began taking two a day instead of one. Weather Bureau staff members at Johnston Island have been replaced by Air Weather Service personnel. The Johnston Island staff and 17 men from Regions 2, 3, and 4 have been detailed to Pacific stations to handle the expanded observational program.

Technical experts from 44 nations gathered in Washington, D.C., on March 26 for the Third Session of the WMO Commission for Synoptic Meteorology. The delegates were welcomed to the 26-day session by the Honorable Harlan Cleveland, Assistant Secretary of State for International Organization Affairs, Dr. F.W. Reichelderfer, and D.A. Davies, Secretary-General of the WMO. Paul H. Kutschenreuter, Assistant Chief of the Weather Bureau, is President of the Commission.

The World Meteorological Organization announced in February that the publication of International Geophysical Year synoptic data is virtually complete. 16, 361 IGY Microcards, covering surface and upper-air observations taken by 110 participating countries at 3000 stations, are now available through the WMO.

Bureau Forecasters Played Major Role In Successful Mercury Orbital Flight

Although weather and weathermen are always in the news, the most publicized forecasters of early 1962 have been the men of the Bureau's Project Mercury Weather Support Group. Weather was the villain in at least four postponements of Colonel Glenn's orbital flight, and for a while the forecasters were in the limelight almost as much as the astronaut himself.

Colonel Glenn's flight was scheduled for January 24 and 27, February 1, 13, 14, 15, and 16, and was cancelled each time. Cloudiness over Cape Canaveral was the major factor in the cancellation on January 27. On February 13, 14, 15, and 16, weather in the central Atlantic was poor.

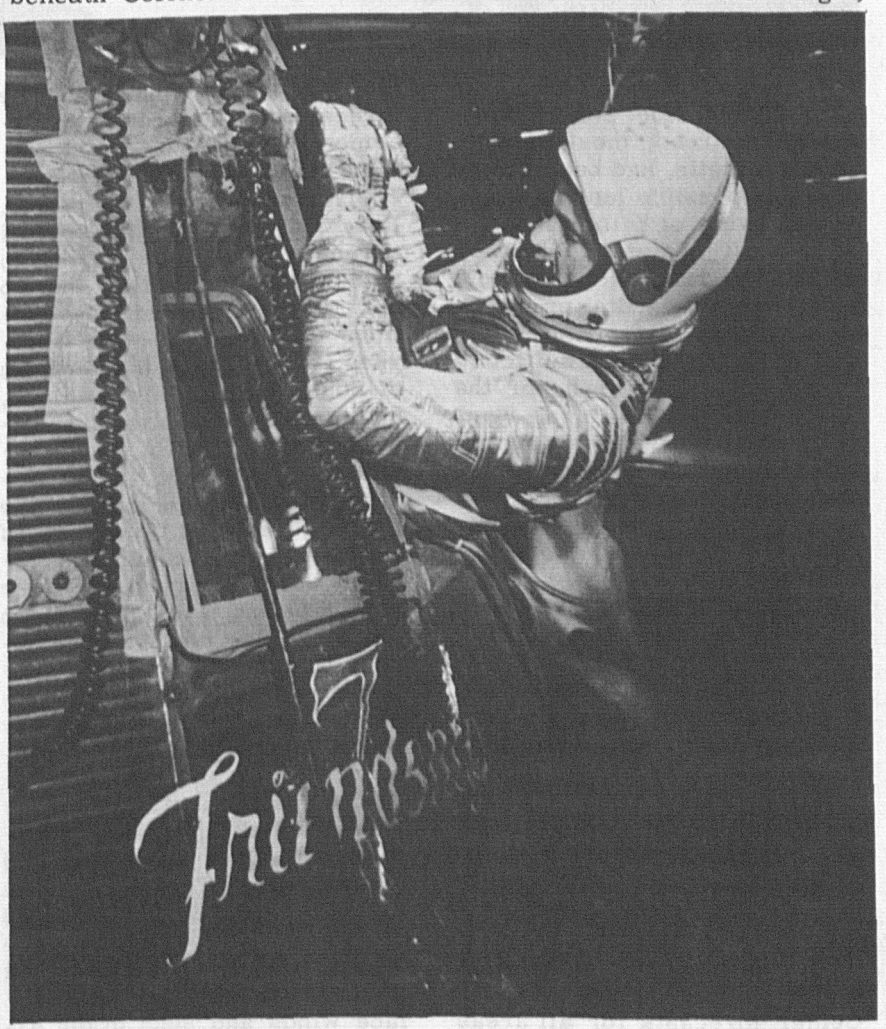
The launch was rescheduled for February 20. Over the weekend of February 17 and 18, the weather in the Atlantic improved. However, a cold front was moving slowly eastward, leaving no doubt that it would reach central Florida by the time of launch. On the afternoon of February 19, the Mercury Operations Director was advised by the Bureau's Weather Support Group that there was no more than a 50-50 chance for launch on the following morning and that Atlantic weather would deteriorate as the front moved off the coast, making postponement until February 21 futile.

The weakening squall line moved into Cape Canaveral at 3 a.m. EST on February 20, accompanied by multiple layers of clouds, some of which were lower than a thousand feet. After daybreak, northerly surface winds increased, and veering winds in the middle and upper atmosphere promised a substantial decrease in the middle and upper cloud layers. The Operations Director was then assured that weather conditions would be "go" before late morning. By 8:30 a.m. EST, weather at the launch site had ceased to be a problem. Friendship 7 was successfully launched at 9:47 into practically clear skies.

The Mercury weathermen used information gathered from all over the world to forecast the winds, the state of the sea, cloudiness, and visibility for Cape Canaveral and all areas beneath Colonel Glenn's orbit.

Forecasts for a manned orbitul space flight must take into account all meteorological factors affecting the launch and recovery operations. Wind and sea conditions at Cape Canaveral must be calm enough to permit an emergency rescue by helicopters or small craft if a failure should occur before or immediately after launch. Visibility and sky conditions should enable special cameras around the Canaveral area to track the vehicle during the launch phase.

For Colonel Glenn's flight,



Colonel Glenn enters the Mercury spacecraft

Moment of decision: Ernest Amman (second from left) gives the weather recommendation to Project Mercury Operations Director Walter C. Williams (third from left). This picture was taken eight hours before Gus Grissom's suborbital flight.

the planned landing area was near Puerto Rico, and a number of other areas, most of them in the Atlantic, had been designated as possible landing areas in the event of failures in the spacecraft system. Recovery ships were stationed near most points where a landing might occur. In these areas, the ceiling and visibility had to be sufficient to permit air search for the spacecraft. If the seas were very rough, the recovery operation would become hazardous. Therefore, each ship had to report satisfactory weather, expected to continue for several hours.

Although a landing outside the Atlantic Ocean was unlikely, several spots in the Indian and Pacific Oceans had been selected as emergency landing areas because they were accessible to rescue forces.

More than a year ago, the Weather Support Group set up special facilities at Suitland, Miami, and Cape Canaveral to provide weather information for the Project Mercury flights.

The headquarters office at the National Meteorological Center forecasts for all areas beneath the orbital path except the Atlantic. In preparing the forecasts, the Mercury weathermen can draw upon observations regularly received in Suitland from much of the world. For the Glenn flight, special arrangements were made to gather data from areas that do not ordinarily send observations to NMC. Weather analyses from Nigeria, the Republic of South Africa, New Zealand, and Australia were sent to Suitland by way of NASA communications systems. The Australian Meteorological Service prepared special forecasts of winds and sea conditions beneath the Mercury track in the Indian Ocean and the western Pacific. Also, the Weather Bureau Airport Station in Honolulu prepared special forecasts of weather beneath the Mercury track in the North Pacific Ocean.

The Miami unit, headed by Jesse Gulick, prepares forecasts for Cape Canaveral and the Atlantic. These forecasts must be specific and detailed as to winds aloft at the expected launch time, the cloudiness at Cape Canaveral, and the surface winds and seas in the Atlantic. The Mercury forecasters in Miami make use of the already established facilities and long experience in tropical forecasting available there.

The Cape Canaveral office serves as a funnel, channeling weather forecasts and information from Suitland and Miami into the complex operations of the man-in-space program. NASA has provided quarters for the Canaveral unit in its new Manned Spacecraft Center Field Operations Building. The unit also has operational facilities in the Mercury Control Center. Both offices have direct telephone and facsimile lines to the Miami and Suitland units.

Between operational periods, the Cape Canaveral unit is a fairly relaxed two-man station. Ernie Amman, the MIC, and Harlan Higgins provide limited forecast service for Mercury tests and keep an eye on any storms that might make it necessary to "button up" the launch pads. During non-operational periods, they maintain extensive liaison with the Air Weather Service, the Atlantic Missile Range, NASA Launch Operations Center, and other agencies. In preparation for

coming tests, Amman and Higgns detail weather requirements and arrange aircraft reconnaissance and special communications. They make use of these quieter periods to keep up with the whole field of space technology.

A few days before the scheduled launch, the staff is augmented by the Chief of the Project Mercury Weather Support Group, Kenneth Nagler, who may bring additional meteorologists with him to the Cape, and by Edward Mitros of the Miami unit.

For about ten days before each scheduled launching, NASA maintains a log of all factors, including weather, involved in preparation for the flight. Any existing or forecast weather conditions that might affect the tracking and communications networks, ship movements, or preliminary tests at Cape Canaveral are noted in the log.

Five days before a planned operation, an outlook of expected weather conditions, with emphasis on launch and recovery areas, is prepared at Miami and distributed at Cape Canaveral. Additional forecasts are issued on each of the three days before launch.

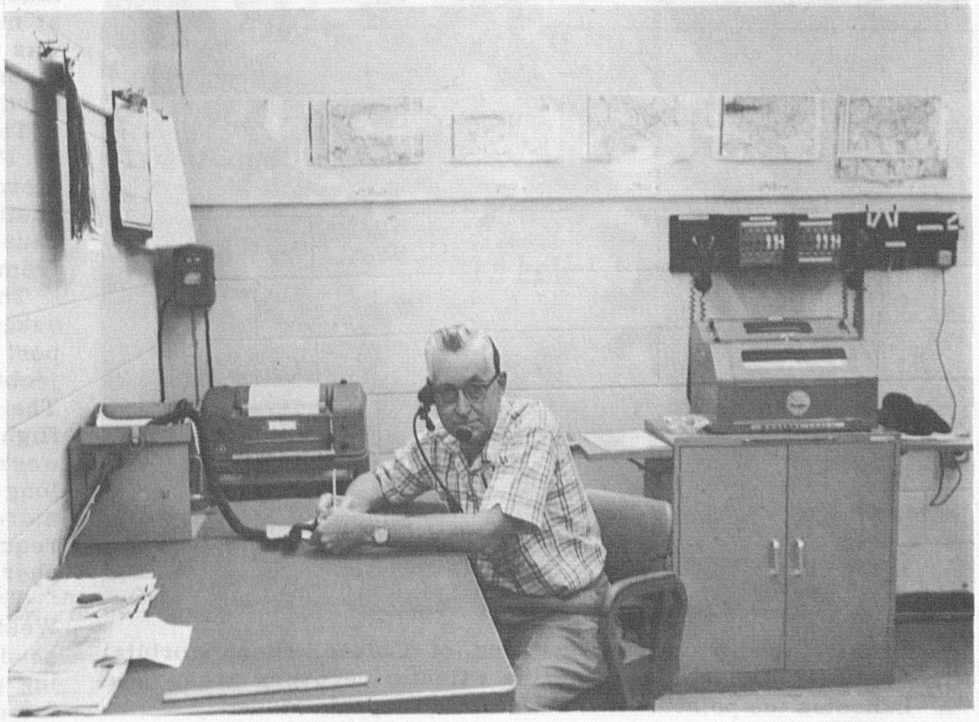
A formal weather briefing is held two or three days before the launching, together with a general review of all other operations connected with the mission.

About eight hours before launch, if other systems and components are ready, the Operations Director is given a weather recommendation. The Director then decides whether or not to commit equipment and personnel all over the globe to the planned operation. The weather recommendation must consider a host of possibilities. Marginal conditions may have to be risked in one area to take advantage of good conditions in another. If a delay is necessary, how long will it be? Does good weather promise to last long enough to accomplish a difficult recovery? If deterioration takes place during the countdown, how much delay should be anticipated? What might be the best time in the countdown to program for weather delays of a temporary nature? Although the ultimate decision rests with the Operations Director, he leans heavily upon the meteorological recommendation.

The formal countdown begins about six hours before the planned launch time. During the countdown, and later during the recovery period, Nagler and Amman are in the Control Center where they are immediately available for consultation with the Operations Director or anyone else who needs weather information.

Once the countdown is underway, several kinds of special observational data are available. Surface and upper-air wind measurements are taken frequently by Pan American observers at the Cape. The U.S. Navy recovery ships report at frequent intervals on wind, cloud, and sea conditions. Air Force planes make special reconnaissance flights over the Atlantic.

If there is precipitation in the Florida area during the countdown, the Miami unit prepares composites of radar pictures from Miami, Daytona Beach, and Tampa and forwards them to Cape Canaveral at frequent intervals. Under certain



Harlan G. Higgins, a member of the Bureau's staff at Cape Canaveral, receives weather reports from reconnaissance aircraft during a manned Mercury flight. The telephone and facsimile facilities on the right connect the Canaveral unit with Miami and Suitland.

NASA Photographs

circumstances, the composites give a good indication of periods during which weather conditions at the launch site will be unacceptable.

During the countdown, constant liaison is maintained with the Air Weather Service forecaster who provides weather support to the Range Safety Officer and to the Atlantic Missile Range. The Operations Director, the Flight Director, and the Recovery Director are briefed at frequent intervals. Any delay in the countdown requires an immediate reevaluation of conditions as they may affect the altered launch time.

When the countdown is complete and the "bird" is on its way, the Mercury weathermen keep the Flight Director informed of weather in the landing areas. Following the flight on their maps, they stand ready at any moment to recommend the best emergency landing areas from the standpoint of weather.

Several months ago, Colonel Glenn and his alternate, Lt. Commander Carpenter, were briefed by the Mercury Weather Support Group on the probable weather around the world during January and February. The astronauts had agreed to make certain weather observations while in orbit, if time permitted. Could cloud layers and cloud types be distinguished with the human eye from 150 miles above the earth? At night, would reflected moonlight make it possible to see clouds, land, and water? These and other observations of interest to meteorologists were suggested by the Mercury weathermen.

On the morning of February 20, Ken Nagler rode to the launching pad with Colonel Glenn. In this final briefing, Nagler gave Colonel Glenn a weather map to carry on his flight and discussed the weather as it affected all aspects of the operation. He pointed out certain regions that should be avoided if an emergency occurred and the astronaut had a choice of landing areas. In preparation for planned navigation experiments, Nagler told Glenn which coastlines would be obscured by cloud cover and which would not. He also suggested areas of meteorological interest for the pilot to observe and photograph.

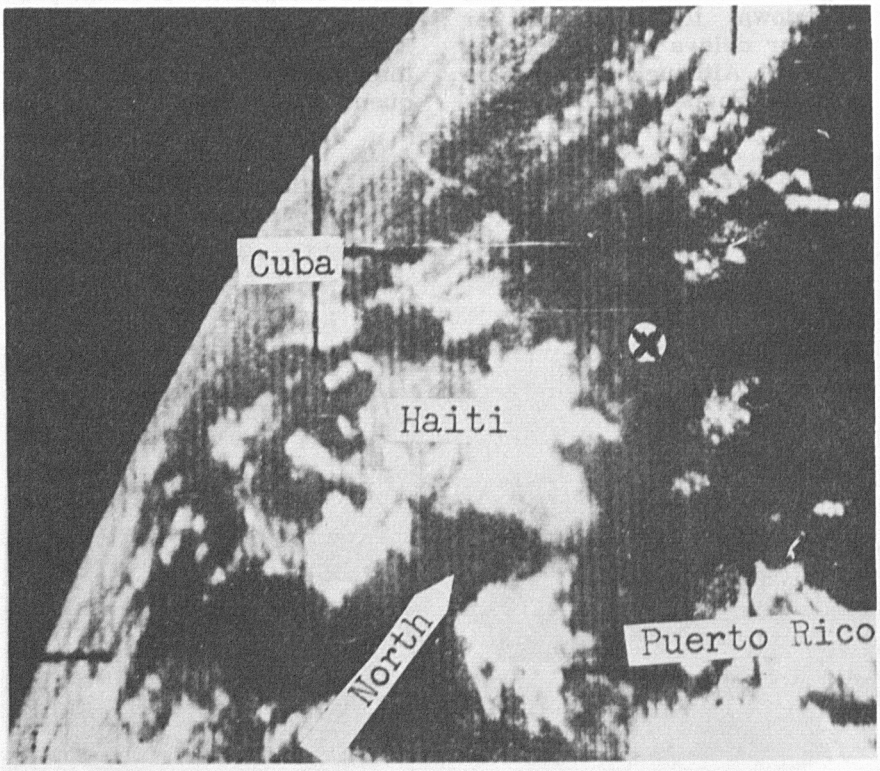
TIROS information, which had already been used in preparing analyses of the weather in remote regions of the world, was even more helpful in forecasting the cloudiness along coastlines and determining the areas of special meteorological interest.

Because of the need for manual operation of the spacecraft's controls, Colonel Glenn was unable to carry out the full observational program. He did, however, report that he was able to distinguish the different cloud types and layers. Over the Indian Ocean, he saw lightning in two storms. Moonlight made the clouds clearly visible at night. In fact, the astronaut was astonished at the total amount of cloud cover over the earth.

The longer flights planned by Project Mercury will cover more of the earth, making forecasting even more difficult because of the scarcity of data from the Southern Hemisphere.

The Weather Bureau has been asked to provide weather support for the man-in-space projects that will follow Mercury. The Gemini program, with flights lasting as long as two weeks, will require accurate long - range forecasts. The more advanced programs will require studies of the atmospheres of other planets.

The men of the Mercury Weather Support Group are already at work on the forecasting problems involved in these future space flights.



About three hours before the end of Colonel Glenn's orbital flight, TIROS IV photographed the Atlantic recovery area. The "X" indicates the point where the Mercury capsule landed.

RAIN CONTINUES; FLOODING POSSIBLE

Throughout the river basin, conditions are ripe for a major flood.

The Weather Bureau's network of observers has reported a steady accumulation of rain in the gages over an extended period of time, and the ground is thoroughly soaked.

Reports from river observing stations show that the rivers are rising, although they are not yet near the flood stage.

The Bureau's weather forecasts call for heavy rain over a widespread area.

Hydrologists in the River Forecast Center calculate that the major part of any additional rain would find its way into river channels and cause a dangerous flood.

In their calculations, the river forecasters use two sets of data. One, called an antecedent precipitation index, is really an index to soil moisture. It weighs the amount of rainfall that has occurred in the area against the time elapsed since it fell. Rain that fell yesterday is assigned a higher weight than that which fell several weeks ago, because more of the earlier rain will have evaporated or been absorbed by the soil and vegetation.

A set of graphic rainfall-runoff relationships is then used by the hydrologists to predict the percentage of precipitation from a given storm that will run off into rivers and streams. These relationships take into account a number of factors, including the soil moisture at the beginning of rainfall, the amount, intensity, and duration of the rainfall, and the basin's geological characteristics and vegetal cover.

Using these graphs, the forecasters estimate that the heavy rain predicted would, if it actually occurred, raise the river levels above flood stage in many parts of the basin.

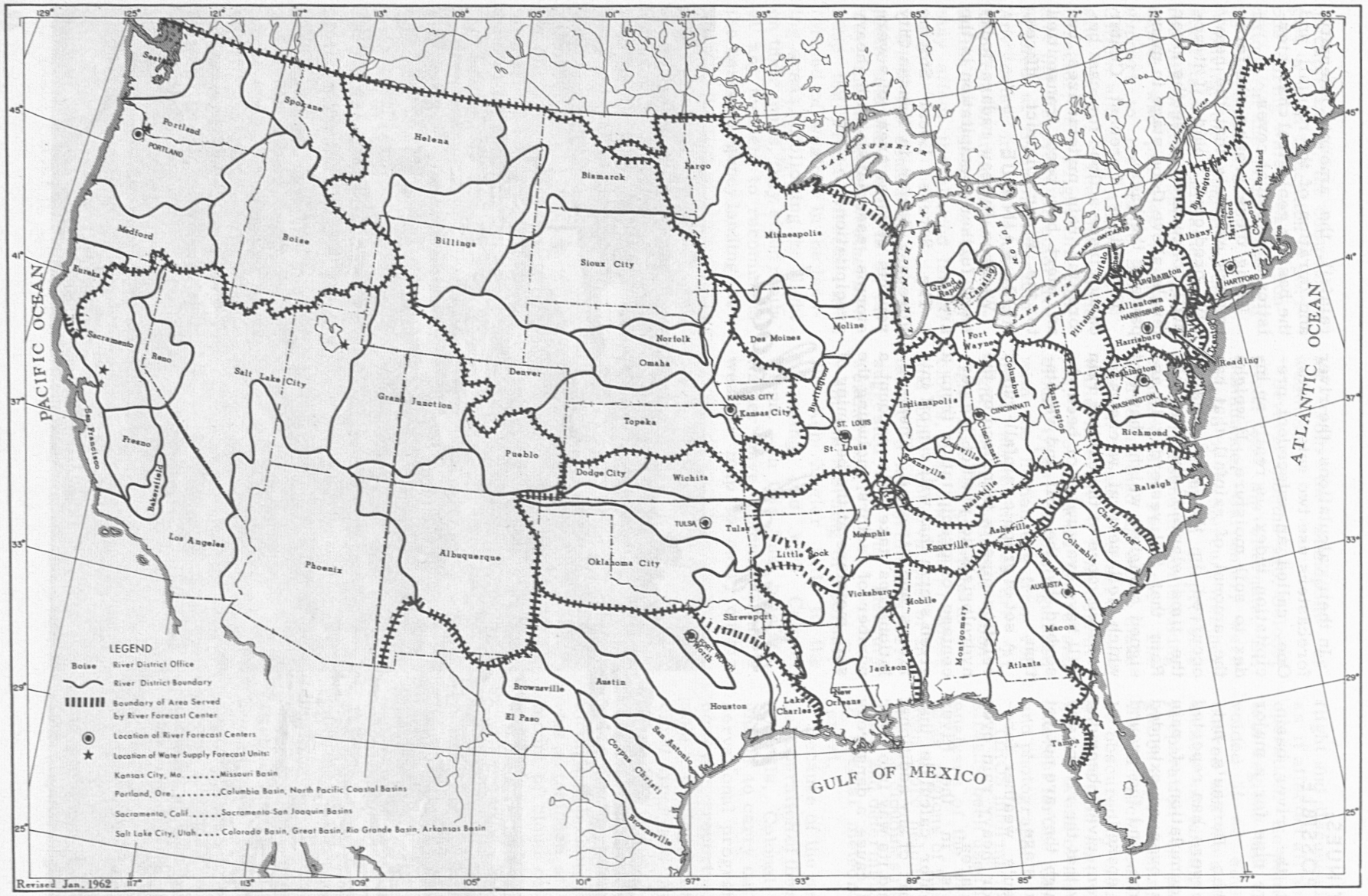
The River Forecast Center cannot issue a flood forecast before the rain materializes, but an alert has been transmitted to the River District Offices.

MORE RAIN DUE

Weather Bureau radars today show further precipitation in the area.

The Severe Local Storms Forecast Center in Kansas City reports several areas of severe storms associated with heavy precipitation.

the story of a flood



River and Flood Forecast Service

Later radar reports indicate that the storm system is slowing and intensifying. Severe squall lines have developed and are moving across the area.

HEAVY RAIN BEGINS; FORECASTERS ALERT FOR FLASH FLOODS

Special precipitation reports--sent only when rainfall exceeds one-half to one inch accumulation--are coming in from the Weather Bureau's observing network. The rainfall reports are collected by the River District Offices and relayed by teletypewriter, radio, or telephone to the River Forecast Center.

In the headwaters of the river basin are several areas subject to flash flooding. Here, the level of the streams rises rapidly, and floods can occur before the rain stops falling. There is no time for observations to be collected, sent to the River District Office, and relayed to the River Forecast Center, and for forecasts and warnings to be sent back and distributed. After past disastrous flash floods, the communities involved established their own local flash-flood warning systems with the help of the Weather Bureau.

Special networks of rainfall observers have been set up to report to a flood-warning representative whenever a certain amount of precipitation occurs. Other observers keep watch on river gages. A local flood warning representative has been appointed to collect reports directly from the observing network and to issue flash-flood warnings to the community.

The Weather Bureau has furnished the flood warning representative with a series of simple graphs on which to base his forecasts. The River Forecast Center keeps him informed as to which curve to use in forecasting. He may, for example, be told to use curve "A" until otherwise notified.

Now, when the observers tell the local representative how much rain has fallen, he can refer to the appropriate graph and have a rough idea of the river rise to be expected from that amount of rainfall.

When the radar observers notify the flood warning representatives that radar reports show heavy rainfall moving toward them, each representative alerts his observers.

EARLY WARNINGS AVERT FLASH FLOOD FATALITIES

When the flash-flood observing network reports rainfall of nearly two inches per hour, the warning representative refers to his graph, formulates a forecast within a few minutes, and spreads the warning throughout the community.

The flash - flood warning system is primarily a means of saving lives, since time is not usually available for moving property. The annual cost to a community of such a warning system is about the price of a good used car.

Workmen use sandbags to divert flood waters. Associated Press photograph, courtesy of the American Red Cross.

WEATHER BUREAU PREDICTS FLOODING AT MANY POINTS

From all over the basin, reports of precipitation and river stage measurements come to the River Forecast Center. These reports have been telephoned by observers to the River District Offices. The River District Offices assemble the reports and relay them to the River Forecast Center, where master forecasts are prepared.

The greatest advance in flood forecasting in recent years has

been the use of precipitation data. Twenty-five years ago, most flood forecasts were based on reported upstream stages. Forecasts could be issued only after floods had begun to crest in the headwaters of large basins. Now, by using the rainfall-runoff relationships, it is possible to estimate the amount of runoff from a given storm and the peak stages this runoff will cause.

The runoff takes a certain period of time, depending on the characteristics of each basin. After predicting the flow from each sub-area of the basin, the hydrologist combines the flows into forecasts for points downstream.

Using the precipitation and river stage reports received from the River District Offices, hydrologists at the River Forecast Center first predict future stages for tributaries in the river system. To do this, they take the results of the headwater forecasts and "route" these forecasts to the points where the tributaries enter the main stream. Tributary forecasts may be issued hours to days in advance and are revised as later reports of rainfall and stage are received.

Finally, the main stem of the river is forecast by combining all tributary forecasts with the observed inflow, taking into account the time required for water in the channel to travel to the forecast points. Main stem forecasts are issued several days to weeks in advance, and the accuracy increases as the crest approaches.

In preparing their predictions, the River Forecast Centers have used analogue computers for the past dozen years. More recently, improved methods of streamflow routing have outmoded the analogue. Digital computers are also being installed at River Forecast Centers to speed forecasting.

The Forecast Center predicts stages for key points throughout the basin and sends the forecasts to the River District Offices. At the District Offices, the forecasts are interpreted and extended to intermediate points.

From the River District Offices, forecasts and warnings are disseminated by radio, television, and the press. The forecasts are also sent immediately to government and private agencies concerned with flood protection and evacuation.

The forecasts indicate that streams will exceed flood stage at many points. Precautions must be taken at once to prevent or minimize death, injury, and property damage.

With early and accurate flood warnings, low-lying areas can be evacuated. Crops can be harvested; personal belongings, machinery, equipment, merchandise, and livestock can be moved to higher ground. Stationary machinery can be protected, and levees can be reinforced. Relief agencies prepare to care for the refugees and to deal with unsanitary conditions that will exist after the flood.

With extensive flooding expected, personnel at Weather Bureau stations begin working overtime, collecting rainfall and river stage reports and disseminating forecasts and warnings.

The Bureau predicts that heavy rain will continue in the area, and relief hydrologists are sent from other offices to assist the River Forecast Center, which is now working around the clock.

Communication facilities are overloaded with incoming reports of precipitation and stream gage height. Storm damage frequently hampers accurate forecast operation by knocking out telephone lines.

Eventually, the precipitation diminishes and finally stops as the storm moves on. But the workload at river forecast offices does not cease with the rain. The floodwaters continue to build to record crests as they move downstream.

Throughout the flood emergency, the River Services Section in the Central Office keeps in close touch with the situation. Tabulations are made of river stages and forecasts for preparation of a national flood summary. The River Services Section alerts national offices of the Red Cross, Civil Defense, and the Corps of Engineers to the developing situation, so that personnel and materials can be sent to endangered or damaged areas.

In the United States, millions of people live or work on land that is subject to flooding. Floods occur in every season of the year and in every part of the country.

Lacking the ability to control storms, man tries to find means of minimizing their effects. Storage reservoirs, levees, and improved channels have been built in many areas to control flood waters. But there are other flood situations where the cost of control would exceed the benefits. In these areas, the best means of decreasing the damage is a reliable flood forecasting service.

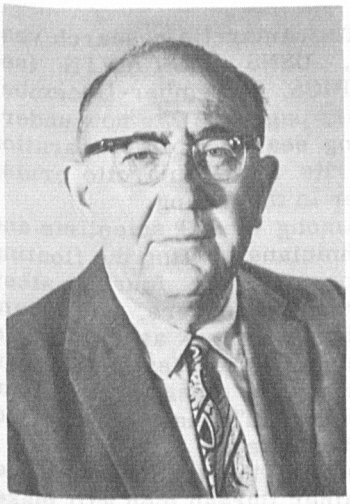
The Weather Bureau's flood warning service costs about a million dollars a year. The savings attributable to the service are at least $30 million a year.

A good flood forecasting service provides accurate and timely forecasts and warnings, effectively disseminated. The accuracy depends largely on adequate data and effective forecasting methods. Timeliness is measured by the period of forecast--the interval between the time of issuance and the time of occurrence of the predicted stage. The length of the forecast period depends on the characteristics of the basin and the speed with which data can be assembled and translated into terms of river flow and stage. Effectiveness of forecasts and warnings depends upon the facilities, the completeness of their dissemination, and the confidence with which the public accepts them.

One of the great problems in flood forecasting is the lack of sufficient precipitation data. The

(continued on page 60)

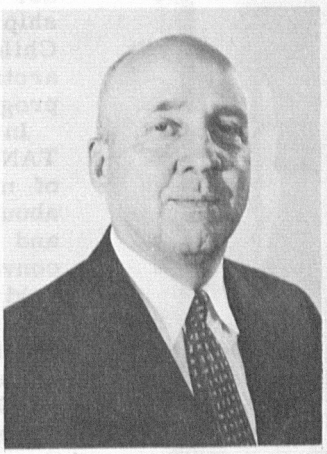
William E. Hiatt
Chief
Hydrologic Services Division



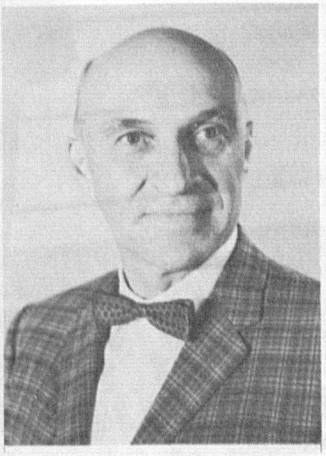
Alexander L. Shands
Assistant Chief

Max A.Kohler
Chief Research Hydrologist

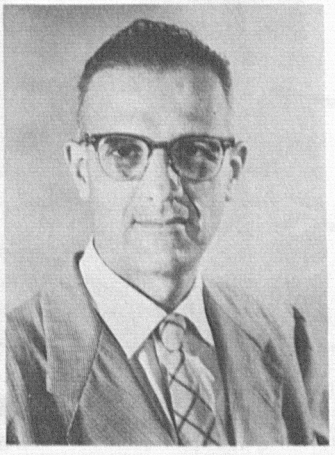
Bennett Swenson
Chief
River Services Section



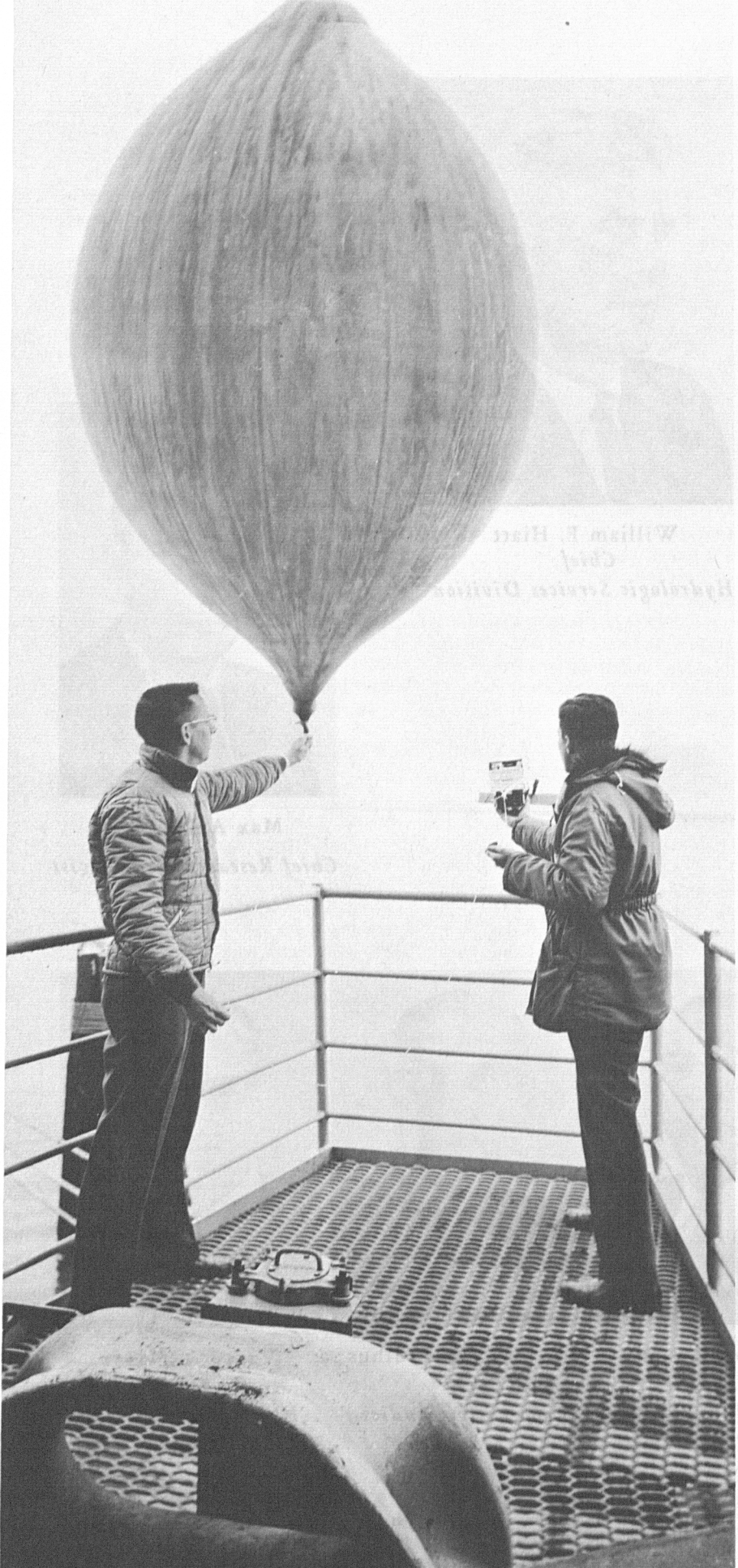
Tor J.Nordenson
Chief
Hydrologic Investigations Section



Joseph L. H. Paulhus
Chief
Cooperative Studies Section



Vance A. Myers
Chief
Hydrometeorological Section



ELTANIN PREPARES FOR ANTARCTIC CRUISE

The Antarctic research vessel, USNS ELTANIN (see TOPICS, November-December 1961, page 192), is now undergoing sea trials in preparation for its first Antarctic cruise later in the spring.

Among the 32 scientists and technicians staffing the floating laboratory are four Weather Bureau observers. William Muldoon serves as Official in Charge of the Weather Bureau unit and is assisted by John Maloney, Thomas Nastos, and Jack Dielkey.

During the trial period, the Weather Bureau men will make rawinsonde observations jointly with an Ocean Station Vessel to check out meteorological equipment.

After a 30-day environmental shakedown cruise in the Labrador Sea and Davis Straits, the ship will sail for Valparaiso, Chile, to participate in the Antarctic geophysical research program.

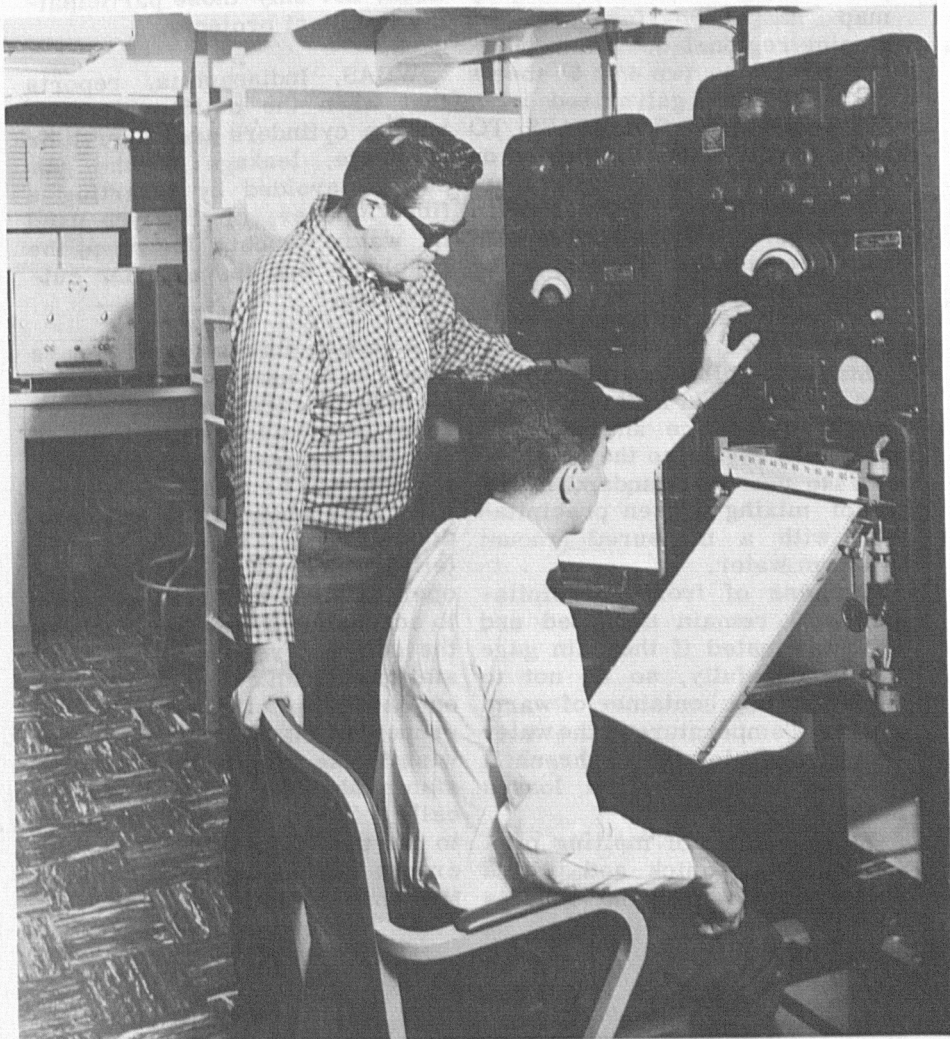
In Antarctic waters, the ELTANIN's course will be a series of north-south lines, each leg about 125 miles apart, crossing and recrossing the Antarctic convergence zone, where the cold waters from Antarctica sink under the warmer waters of the Atlantic, Pacific, and Indian oceans. The climate of the Southern Hemisphere is believed to be vitally affected by the action of waters at the convergence.

Scientific research aboard the ELTANIN is sponsored by the National Science Foundation. The ship is operated for the Foundation by a 47-man civilian crew of the Military Sea Transportation Service.

Above: The ELTANIN visits Washington, D.C. The AN/SPE-28 radar used for meteorological studies is on the forward mast, above the ice conning station.

Left: Aboard the ELTANIN, Jack Dielkey holds a weather balloon, while Tom Nastos prepares the instrument package.

Right: John Maloney and Tom Nastos (seated) at work in the Bureau's quarters aboard the ELTANIN.



FROM THE FIELD...

Climatologists Meet

The fourth meeting of State Climatologists was held at the Fort Worth Regional Administrative Office from January 3 to February 2. The program, arranged by Area Climatologist C.K. Vestal, included discussions of arid zone and mountain climatology.

Attending the meeting were: W.C. Hickmon, Arkansas; P.C. Kangeiser, Arizona; J.W. Berry, Colorado; G.F. Von Eschen, New Mexico; S.G. Holbrook, Oklahoma; R. B. Orton, Texas; and E.A. Richardson, Utah-Nevada. L.A. Joos represented the Office of Climatology. Leslie Smith, who died on February 3, represented the San Francisco Weather Records Processing Center.

Charleston Harbor Forecasts

On January 15, the Weather Bureau Airport Station at Charleston, S.C., began issuing harbor forecasts twice daily, at 4 a.m. and 4 p.m., seven days a week.

The forecasts give visibility, wind, weather, and sea conditions for the outer and inner harbor and for the river section of the harbor. They are distributed on the local teletypewriter circuit and are available for broadcast by radio and TV and for publication by the local newspapers. If there is a demand for it, the forecasts will also be made available to the marine operator for ship-to-shore calls.

Weather Balloons in the News

Weather balloons continue to make news with their freakish behavior.

Two balloons launched from the Buffalo Weather Bureau Airport Station on successive days last November dropped their radiosonde instruments on the same farm after traveling more than 100 miles and attaining altitudes above 85,000 feet. MIC Barney Wiggin estimates that the odds against such an occurrence are about 1,130,000 to 1.

In January, a balloon launched at the WBAS in Albany, N.Y., landed near the Boston Airport Station, having traveled the 200 miles between stations in a little more than two hours.

Bureau Man's Invention Installed on Savannah

Several years ago, William E. Kennedy, a Meteorological Technician at Cleveland, developed an electronic conversion ring for orienting shipboard anemometers to true north. The invention brought him $50 through the Bureau's suggestion program.

The new atomic-powered ship, Savannah, now carries three of Mr. Kennedy's devices, and 38 more are being added to Weather Bureau installations aboard Great Lakes boats.

The ring is used with a land-station indicator and is moved to bring the ship's compass heading to an index point, simplifying the taking of wind direction.

Before Kennedy invented his inexpensive marine conversion ring, the equipment used for the same purpose was heavy and awkward.

TOPICS TIPS

At the Weather Bureau Airport Station in Denver, a display map has been fashioned by glueing regional-scale aeronautical charts to two 4' x 8' sheets of lightweight galvanized iron. SIGMETS and ADVISORIES TO LIGHT AIRCRAFT are posted on the map in the correct geographical locations by means of small magnets. This method of display prevents an advisory being overlooked because it is hidden by others in a clip file.

Stations collecting precipitation for radiation fallout projects cannot dilute ice and snow in their rain gages, so they are unable to use the standard method of mixing frozen precipitation with a measured amount of warm water.

Samples of frozen precipitation will remain undiluted and uncontaminated if the rain gage is set carefully, so as not to tip over, in a container of warm water. Temperature of the water should be below 95° Fahrenheit to prevent evaporative losses in the sample.

This method of melting precipitation is quick and allows accurate measurement, and its use is authorized for all stations, not only those participating in fallout projects.

WBAS, Indianapolis, reports that when the outlet valves on helium cylinders are scarred or defective, leakage of the gas can be avoided by inserting a fibre washer, of the type used in water faucets, between the regulator and the cylinder outlet valve.

A rubber stamp with a compass rose can be used to facilitate the plotting of radar reports from a radar station for which there is no compass rose on a chart. Such a stamp can be made with a compass rose about three inches in diameter, a retractable pin (either spring-loaded or hand-operated) set through the center to accurately locate the center of the compass rose on the desired station, and an appropriate guide on the side of the stamp for proper orientation. Stations that wish to use such a compass rose stamp should procure them locally. Some stations may want to use the compass rose in preference to stocking the radar plotting chart, Map 1780.

EMF: *Its Status at the Close of 1961*

The following report on the status of the Establishment of Meteorological Facilities Program was prepared by the Observations and Station Facilities Division. All figures are effective December 31, 1961.

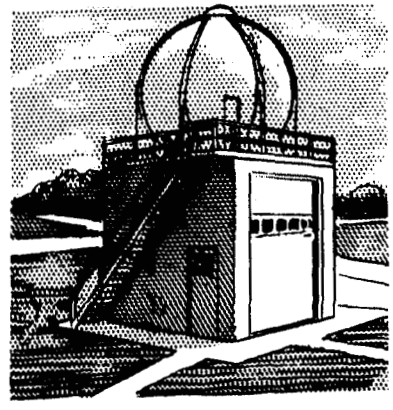
Upper Air

Several unfinished projects in this category were carried over from the 1960 summary. Among these were relocations at Green Bay, Sterling (Virginia), and San Antonio, and shelters at Huntington and Lake Charles; installation of the remaining 2 of the original order of 42 radiotheodolites and of 19 of the second procurement of 23 instruments. Also carried over (1961 appropriations) were relocations at Nashville and Pittsburgh; procurement and installation of transponder adjuncts at 35 of our strategic upper-air stations; and purchase and installation of upper-air observing equipment on 16 merchant vessels.

New projects authorized in FY 1962 included: relocation of the Burrwood upper-air station, and procurement and installation of upper-air observing equipment on 8 additional merchant vessels. Decision was made to build an urgently needed shelter at Brownsville.

Status

Of the 5 carryover relocations, Sterling and San Antonio are complete, and Green Bay is scheduled for the 4th quarter of this fiscal year. Relocation surveys are in progress at Nashville and Pittsburgh with off-airport sites indicated at both locations. Both carryover shelters (Huntington and Lake Charles) are complete. The remaining 2 radiotheodolites of the original procurement are installed and operating, as are 16 units of the second procurement. The transponder order has been delayed, and certain modifications are being incorporated at the factory. The pre-production model is now expected about April 15, 1962, with production units not indicated this fiscal year. Thirty units of shipboard upper-air receiving equipment are on order, with the pre-production model now undergoing tests at IED. Remaining units to outfit 16 ships (3 units per ship) will be ordered after the pre-production sample has been thoroughly tested. Fifty-one recorders for these receivers have already been delivered, and production units of the 20 shipboard inflation shelters on order are just beginning to come off the line.



Surveys are proceeding in connection with the Burrwood relocation. No action has been taken to date to acquire hardware for the 8 additional upper-air ships, since S&E support to man the ships is being provided much more slowly than the equipment (only 5 ships programmed for FY 1962). The Brownsville shelter bids are in, and the shelter should be completed by the end of the 3rd quarter.

Radar

Unfinished projects in this field included installation of the remaining 13 WSR-57's (including Missoula, for which $200,000 was specifically appropriated in FY 1961) and of 7 of the original 8 microwaves. Funds for hardware to permit WB employees to maintain 24-hour watch at 17 ADC sites were also a carryover item from last year's report.

New radar program authorized in FY 1962 included 2 additional microwaves (one for Chicago) and the relocation of the 31st WSR-57 (originally installed at Columbia, Mo., for training purposes) to Catalina Island as an operating instrument. Also included were funds to modernize the 3 SPIM radars at Hatteras, Nantucket, and San Juan.

Status

Only Chicago is left of the 30 original WSR-57's, and action is getting underway to install that unit at the Cloisters site at the University. The Missoula instrument (with 2-way microwave) on Point Six Mountain was commissioned on November 1, 1961. Two additional microwaves (New Orleans and Fort Worth) are commissioned, and Detroit (#4) is approaching completion. Amendment to the Motorola contract for the Cincinnati installation (#5) is expected soon. The New York microwave is under contract to RCA and should be completed early this calendar year. Funds for ADC hardware are still being held in reserve, since matching S&E support funds to permit staffing of the sites have not been forthcoming.

Work is proceeding on the Catalina radar. Contracts have been awarded for the tower, cable, road construction, and ducting. The prefab building has been ordered. Target date for commissioning of the radar is late fall of calendar year 1962. Contract was awarded for most portions of the modernization of the SPIM radar, but difficulties have arisen and further negotiation appears likely.

End-of-Runway

The original program to procure and install (at ILS-equipped runways) 75 pairs of

ESTABLISHMENT OF METEOROLOGICAL FACILITIES APPROPRIATION

Fiscal Year	Appropriation	Obligations
1956	7,500,000	4,796,033
1957	2,500,000	3,172,200
1958	600,000	1,262,420
1959	1,575,000	2,111,508
1960	2,500,000	1,937,436
1961	5,250,000	2,833,422
1962	5,250,000	4,909,281 (Est.)
TOTALS	25,175,000	21,022,300

Amount Reserved for Subsequent Years $4,152,700

end-of-runway equipment from 1956 and 1957 funds is still not entirely complete. This is also true of the 14 runway visual range computers purchased from 1960 funds. The original program has since been augmented by funds (1961) to procure and install 52 additional pairs of end-of-runway units and 105 additional RVR computers.

New end-of-runway program authorized in FY 1962 included 51 more pairs and 51 additional RVR computers. Funds were also provided to modernize the rotating beam ceilometers already in service to permit better performance.

Status

Only 3 pieces of end-of-runway equipment remain to be installed from the original 75 pairs purchased with 1956 and 1957 funds. Six of the 14 RVR computers purchased with 1960 funds are in operation. The 52 additional transmissometers and rotating beam ceilometers authorized from 1961 funds are on order, and about half of the transmissometers have already been delivered. Production units of RBC's are expected to begin about April, 1962. The 105 RVR computers authorized in the 1961 appropriation will be ordered concurrently with the 51 authorized in 1962. Target date for award of contract is March or April 1962.

Of the new program authorized in FY 1962, both transmissometers and rotating beam ceilometers have been ordered. The RBC's were handled through increase option with the builder of the previous instrument, but the transmissometers were handled on a new bid and contract award. A portion of the modernization kit for presently operating RBC's is on order, but the remainder is not scheduled this fiscal year.

Other Surface Observational Facilities

The original hygrothermometer project (134 instruments) was a carryover from last year, as was the program to procure and install 107 wind recorders. Additional program in this category carried over from last year includes purchase and installation of 70 additional hygrothermometers at high priority airports, 81 wind recorders (with readout capability), 5 automatic meteorological observing stations (AMOS-IV), and 70 modern briefing consoles.

New program authorized in 1962 included purchase and installation of 60 additional hygrothermometers, 50 wind recorders, 10 AMOS-IV's, and 2 marine automatic meteorological observing stations (MAMOS). Funds were also provided to instrument completely the basic climatic network at 265 locations.

Status

At the end of calendar year 1961, only 6 instruments remained to be commissioned of the original hygrothermometer order of 134 units. Thirty-six wind recorders of the 100 units were loaned to the tornado project for network use. The thermoshields and aspirators for 70 hygrothermometers ordered from FY 1961 funds have been delivered, but preproduction models of the sensors and indicators were not satisfactory. Discussions on this phase are continuing with the successful bidder. Thirty-one wind recorder systems (having readout capability) have been ordered from 1961 funds (funds available would not buy the 81 units originally programmed). Pre-production model of the wind recorder system is due in March 1961. The following sensors for the AMOS-IV's are on order: 15 RBC's (5-1961 plus 10-1962); 5 digital barometers (1961 funds); 15 transmissometers (5-1961 plus 10-1962); and 10 aspirators for temperature and dew point systems.

Wind equipment to go with the 5 AMOS-IV's (1961) will be handled by negotiation with the company making the present wind systems. Bid action and award of contract for the 5 basic AMOS-IV's are expected by the end of March 1962. Funds remaining in reserve from the original appropriation for briefing consoles were still in reserve at the end of December 1961.

Of the 60 hygrothermometers authorized in 1962, 25 aspirators and thermoshields have been ordered. The procurement of 25 sensors, telemetering systems, and indicators, to match the like number of aspirators and thermoshields already on order, hinges on the outcome of discussions now being held with the successful bidder on the 1961 procurement

of these items. Funds for 35 of the 60 hygrothermometers authorized in 1962 are being held to see the outcome of the 1961 order for this instrument. Some of the sensors for the 10 AMOS-IV's authorized in FY 1962 are already on order as previously indicated. The basic computer section for these 10 units will not be ordered until the pending data logger can be evaluated for possible use with the AMOS. Specs are being readied for the 2 MAMOS, with bid action and award of contract scheduled for the 4th quarter of FY 1962. Equipment for instrumenting the basic climatic network is being procured, and a good start has been made on setting up the necessary stations. Eighteen stations had been completed as of the end of December 1961.

Construction in Alaska and Pacific

The three major construction items in this category continuing from last year's report were the construction of 4 housing units at the Nome (Alaska) airport, move of the office and inflation shelter at King Salmon (Alaska), and move of the inflation shelter at Bethel, Alaska.

The FY 1962 appropriation authorized relocation of the office and inflation shelter at Nome, the building of 2 additional housing units at the Nome airport, and relocation of the office and inflation shelter at Kotzebue, Alaska. In the Pacific, construction of an office and inflation shelter at Wake Island and a shelter at Lihue were approved.

Status

The three Alaskan construction items carried over from last year's report are complete. Nome housing units (4) were accepted on November 6, 1961; the Bethel shelter was accepted on November 16, 1961; the King Salmon project was scheduled for acceptance inspection soon after the first of the year.

FY 1962 authorized projects are scheduled for this spring and summer except for Kotzebue (Alaska) and the Lihue (Hawaii) shelter, which have been delayed and will extend over into FY 1963 for action.

Hydrologic Instrumentation

The 1960-61 program to purchase and install modern river and rainfall gaging equipment, along with the necessary communications components, continues from last year.

An additional $200,000 were provided in the 1962 appropriations tentatively programmed as follows: automatic river gages, 15; resistance river gages, 40; radio river/rain gages, 8; evaporation stations, 37; and recording rain gages, 140.

Status

The pre-production model of the meteorological radar transponder (formerly the radar beacon rain gage) has been accepted, and production has begun on the 40 units programmed from 1960 and 1961 funds. Final specifications have been written for the resistance river gage, with procurement action on the 1962 order scheduled for the 3rd quarter of this fiscal year. The FY 1962 procurement of 140 recording rain gages is awaiting the outcome of a small order of these instruments which has run into pre-production trouble. Procurement action on the 140 units is still scheduled for the 3rd quarter of FY 1962. The entire order of 120 flash-flood transceivers has now been placed, with many units already delivered and 40 in operation by the end of December 1961.

Twenty of the evaporation station equipments are on order, and specifications have been readied for bid action on the remaining 17 in the 1962 program. Two evaporation stations were operating by the end of the calendar year.

Twenty additional automatic river gages (ADR with telemetering unit) have been ordered, thus accounting for 60 of the 65 programmed through FY 1962. Of those on order, 30 have already been delivered, installed, and commissioned as of December 31, 1961.

OBLIGATIONS BY FISCAL YEAR AND ACTIVITY

Activity	1956	1957	1958	1959	1960	1961	TOTALS
Upper Air	744,506	1,523,694	35,290	261,515	938,322	545,760	4,049,087
Radar	2,551,458	479,142	317,890	312,362	529,164	435,914	4,625,930
End-of-Runway	422,958	274,275	170,528	51,001	92,163	497,255	1,508,180
Other Surface	248,812	15,288	209,440	15,651	13,587	146,658	649,436
Construction in the Territories	58,160	595,740	311,553	266,916	105,909	296,680	1,634,958
Hurricane and Tornado Research	618,249	133,951	0	1,057,798	28,894	487,700	2,326,592
Hydrologic	0	0	0	0	47,042	185,675	232,717
Engineering and Technical Support	151,890	150,110	217,719	146,265	182,355	237,780	1,086,119
TOTALS	4,796,033	3,172,200	1,262,420	2,111,508	1,937,436	2,833,422	16,113,019

Length of Service Awards

40-Year Award

Charlotte F. Millemann,
RAO, New York

35-Year Awards

Richard B. Cowdrick,
WBAS, Green Bay
Gerald P. Crawford,
WBAS, Oklahoma City
Miles J. Finnegan,
WBAS, Boston
Burton F. Loveless,
Adm. Ops., Central Office
Arlie R. Lowery,
WBAS, Cheyenne
Andrew D. Robb,
WBAS, Topeka
Howard A. Rollins,
WBAS, San Antonio
Franklin K. Stout,
WBAS, Columbus, Ohio

30-Year Awards

Donnell H. Gould,
WBAS, Miami
Harold F. Murray,
WBAS, Orlando

25-Year Awards

E.F. Cook,
RAO, Fort Worth
Ella K. Niederkorn,
WBO, Cincinnati
Clarence A. Woollum,
DMO, Washington, D.C.

20-Year Awards

Earl Banks,
WBAS, Albuquerque
Ernest Beckerleg,
WBAS, San Francisco
Melvin T. Beecroft,
WBAS, Sacramento
Robert F. Bowes,
WBAS, Cleveland
W. Clyde Conner,
WBO, New Orleans
William H. Cook, Jr.,
DMO, Miami
Raymond C. Crooks,
WBAS, San Francisco
Annie M. Darby,
MR, Central Office
Percy J. Deffez, Jr.,
WBAS, Fort Smith, Ark.
Eugene A. Gardner,
IED, Central Office
Richard B. Graves,
WBAS, Eugene, Ore.
Ray E. Hall,
WBAS, Kalispell, Mont.
Garland Hill,
Adm. Ops., Central Office
Herbert H. Hill,
WBAS, Miami
William E. Hillig,
WBAS, Jacksonville
Myrtle M. Hudson,
MR, Central Office
Earnest E. Hutcherson,
WBAS, West Palm Beach
William E. Kennedy,
WBAS, Cleveland
Charles G. Knudsen,
WBO, New York
George M. Kush,
WBAS, San Antonio
Christopher T. Legano,
WBAS, New York
Harold S. Lippmann,
Climat., Central Office
Edmund B. Medinger,
WBAS, Miami
John T. Murray,
WBAS, Williamsport, Pa.
Francis X. Oxley,
Adm. Ops., Central Office
Samuel K. Parrish,
WBAS, Charleston, S.C.
James B. Perry,
WBAS, Boston
Carl M. Relyea,
RFC, Cincinnati
James E. Rhodes,
Adm. Ops., Central Office
William M. Richardson, Jr.,
IED, Central Office
Nicholas E. Rizzo,
RAO, New York
Robert W. Schloemer,
Climat., Central Office
Edgar Schoonmaker,
WBAS, New Haven
Irving I. Shulman,
MR, Central Office
Vincent J. Valli,
WBAS, Hartford
Walter L. Watts,
RAO, Fort Worth

15-Year Awards

Neil M. Bouray,
WBO, Koror
James A. Carr,
WBAS, New York
Thomas W. Davis,
IED, Central Office
Steve M. Fotta,
F&SR, Central Office
Grader Harger,
WBAS, Knoxville
Miles E. McSweeney,
WBAS, Key West
Takaharu Mizukami,
WBAS, Hilo, Hawaii
Ruth C. Peddinghaus,
Adm. Ops., Central Office
Russell Scarpelli,
WBAS, Philadelphia
Frank J. Smigielski,
DMO, Washington, D.C.
Burl Smith,
NMC, Central Office
Robert L. Smith,
WBO, Apalachicola
Nathan W. Stiewig,
Adm. Ops., Central Office
Barbara B. Story,
Pers., Central Office
Bonnie R. True,
NHRP, Miami

Atlanta WBAS Has New Chief; Four OIC Appointments Announced

William P. Nash has moved to Atlanta to serve as Meteorologist in Charge of the Weather Bureau Airport Station. Before his assignment to Atlanta, Mr. Nash was Assistant for Flight Services in the Office of Aviation Weather Services. He has also been Chief of the Public and Agricultural Forecasts Section of F&SR, and Leading Analyst in the Analysis Center. After graduating from Elon College in North Carolina, Mr. Nash became a weather officer in the Air Force and studied meteorology at New York University. He entered the Weather Bureau in 1948 as an Aviation Forecaster at Honolulu.

Four new Officials in Charge have been appointed recently: Ashby E. Craft, WBAS, Nome; Anthony M. Smith, WBAS, Silver City, N. Mex.; Joseph B. Pentecost, WBAS, Johnston Island; and Carl Peterson, WBAS, Kahului, Mauai, Hawaii.

Retirement:

Disability or Optional?

The Civil Service Retirement Bureau has found that almost 25 percent of the employees who apply for disability retirement could obtain the same annuity and other benefits with less effort and with a less thorough medical examination by applying for optional retirement.

An employee who is 60 years old with at least 30 years of service or is 62 years old with at least 12 years of service receives the same annuity, the same health benefits, the same life insurance benefits, and is subject to the same Federal income tax rates whether he retires optionally or for disability.

With less than 12 years of service the optional retiree is not eligible for continuation of his life insurance without cost to him, nor is he eligible for continued enrollment in the health benefits program.

Employees sometimes elect to apply for disability retirement because they believe, mistakenly, that this is the only way they can be permitted to remain on the roll while using a sizable amount of accumulated sick leave. This is not correct. When an employee's health is poor enough that the supervisor can make the statement required in support of disability retirement, the supervisor need not hesitate to grant sick leave, even for a long period of time, provided that the usual doctor's statement justifying such sick leave is obtained. One statement from the doctor could cover the entire period of absence, if it clearly indicates that the employee was or will be incapacitated for that length of time. Additional statements could be obtained at intervals throughout the period of absence, if the supervisor felt it necessary.

Hartford Aviation Weather Seminar Serves as Model for Future Meetings

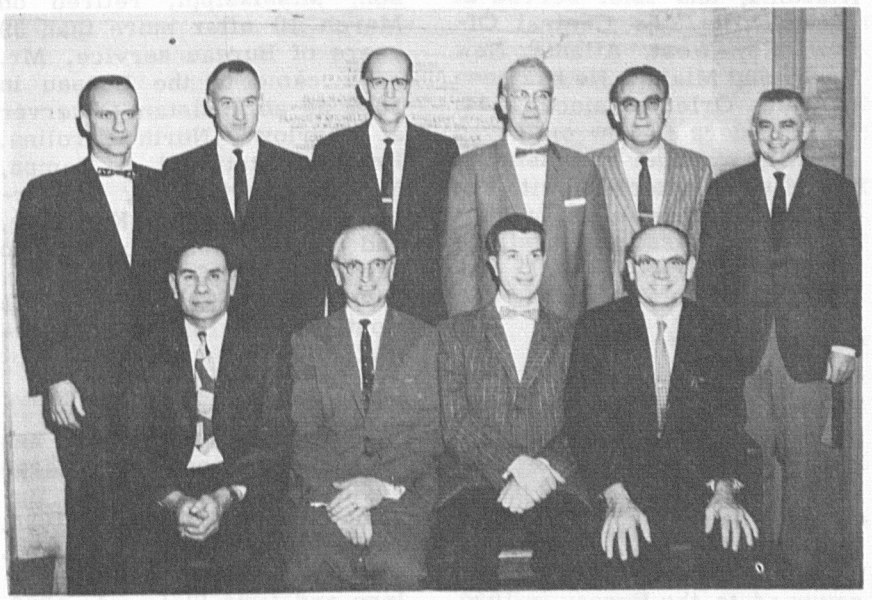
More than 300 pilots attended a one-day Aviation Weather Seminar held at Hartford, Connecticut, last December. The seminar was sponsored by the Hartford Weather Bureau Airport Station, the National Pilots' Association, the Central Connecticut Aviation Association, and the Connecticut State Department of Aeronautics.

Four meteorologists from the Airport Station explained weather terminology and presented information on how to recognize and deal with impending bad weather. Warren Silverzahn spoke on weather fundamentals; Tom Council's talk was entitled "Weather Signposts for the Pilot"; Roger S. Frantz discussed weather and topography in southern New England; and the MIC, Larry Mahar, spoke on "Sources of Flight Weather Information."

Howard I. Gross, Counsel for the Central Connecticut Aviation Association, discussed legal problems related to weather. Another feature of the program was an interesting panel discussion.

The Hartford program was planned as a prototype for future seminars in other areas throughout the country, and its success demonstrated the keen interest of pilots in weather.

The agenda and copies of the weather talks have been distributed to all state aviation liaison officials and FAWS centers.



Members of the Thirteenth Advanced Study Group, meeting in the Central Office from February 5 to May 25, are: (seated, left to right) Perry M. Landgren, OCDM, Everett, Washington; Henry Rockwood, MIC, WBO Pittsburgh; Albert V. Carlin; Vincent J. Oliver; (standing) H. LaGrande Lewis, RAO, Salt Lake City; Frank W. Reanier, WBAS Seattle; O.K. Anderson, WBAS Louisville; Henry R. McQueen, OCDM, Battle Creek; Russel J. Younkin, NMC; and John R. Berger, WBAS Anchorage.

Fleet-Footed RAO Employee Catches Thief of Bureau Car

At one p.m. on January 22, a Government car was stolen from in front of the Weather Bureau warehouse at Fort Worth.

The same evening, Clyde Slay, a Personnel Management Specialist in the Regional Administrative Office, was driving home from work when the missing vehicle careened across a four-lane highway and struck his car.

The driver of the stolen car ran from the scene, pursued by Mr. Slay. After a chase across a golf driving range, over fences and ditches, Mr. Slay caught the man and brought him back to the scene of the accident.

The thief is now awaiting trial on charges of driving while intoxicated, possession of a stolen vehicle, and resisting arrest.

RETIREMENTS

Ralph Sanders

Ralph Sanders, State Climatologist for Louisiana and Mississippi, retired on February 23. Mr. Sanders entered the Bureau in 1926 at Montgomery, Alabama, and later served at Jacksonville, the Central Office, Key West, Atlanta, New York, and Miami. He has been in New Orleans since 1944. Mr. Sanders is now employed as office manager and assistant for church extension with the Southern District of the Lutheran Church, Missouri Synod. His mailing address is P.O. Box 9243, Metairie, Louisiana.

George F. Von Eschen

George F. Von Eschen, New Mexico State Climatologist, retired on March 31. Mr. Von Eschen became a Junior Observer at Huron, South Dakota, in 1926 and also served in Chicago before leaving the Weather Bureau in 1928. He returned to the Bureau in 1930 at Minneapolis and became OIC at San Jose later the same year. He was stationed at Boise from 1933 until 1946, when he moved to Albuquerque. Mr. Von Eschen attended the YMCA College of Arts and Sciences, San Jose State College, the University of Minnesota, and Boise Junior College. His address is 2646 Manzano Street, N.E., Albuquerque, New Mexico.

George V. Fish

George V. Fish, Meteorologist in Charge of the Weather Bureau Airport Station at Jackson, Mississippi, retired on March 10 after more than 39 years of Bureau service. Mr. Fish came to the Bureau in 1922 as an Assistant Observer at Charlotte, North Carolina. He was stationed at Tampa, Miami, Spartanburg, New Orleans, Greenville, Knoxville, and Dayton, before moving to Jackson as MIC in 1945. Mr. Fish's retirement address is Route #1, Box 10, Odessa, Florida.

Arlie R. Lowery

Arlie R. Lowery, who has been Meteorologist in Charge of the Cheyenne Weather Bureau Airport Station since 1946, retired on March 22. Mr. Lowery attended Central College and Iowa State. In 1929, he entered the Bureau as a Junior Observer at Davenport, Iowa. Later duty stations included Reno, Galveston, Shreveport, Kansas City, and New Orleans. Mr. Lowery's address is 122 West Fourth Avenue, P.O. Box 2144, Cheyenne, Wyoming.

The Story of a Flood

(continued from page 50)

Bureau's forecasting procedures are based on rainfall observations. In many areas, the number of these observations is not sufficient to give a true picture of the rainfall distribution essential to the use of rainfall-runoff relationships. Many rains occur between stations in the observing network, leading to incorrect assumptions as to average rainfall over the basin.

The increasing use of radar in observing and measuring precipitation makes it possible to track heavy rainfall events and to warn communities in the path of potential flood-producing rain. But radar, although it can observe rainfall instantaneously, cannot measure directly the amount of precipitation that is falling. Reports from observing networks can be used to calibrate the intensity of rainfall appearing on the radarscope. Another method of evaluating the precipitation pattern appearing on the scope is provided by the radar beacon (transponder) rain gage, which is used with weather surveillance radars to obtain precipitation reports from remote areas.

Since river forecasts can be based on the observed rainfall, they could also be based on accurate forecasts of rainfall amounts. Meteorologists today are learning how to predict amounts of precipitation, but the accuracy of these forecasts is limited by our knowledge of weather processes.

When accurate forecasts of precipitation amounts are possible, the task of the river forecaster will be simplified. But it will not produce perfect forecasts. It will still be necessary to know accurately the relation between rainfall and runoff and its variation under a host of conditions, the relation between runoff and channel flow, and between channel flow and stage.

Assignment No. LVI: This article is concerned with analysis of rocket wind and temperature data for periods in 1957 and 1958. In particular the explosive stratospheric warming of January 1958 is investigated and certain deductions made through cross section analyses utilizing all available sounding data. "Time Section and Hodograph Analysis of Churchill Rocket and Radiosonde Winds and Temperatures," by Sidney Teweles, Monthly Weather Review, Vol. 89, Number 4, April 1961, pp. 125-136.

QUESTIONNAIRE

Col. 61 Mark all correct statements:

1. Explosive high stratospheric warming occurred over Churchill from January 25 to 27, 1958.
2. In the late January 1958 case, strong southerly winds were characteristic of the mesosphere.
3. The 4-day temperature rise of almost 70°C. between 38- and 41-km. has been exceeded at lower levels.
4. Figure 8 shows rather pronounced and unexplained fluctuations in the height of the tropopause.

Col. 62 The author recommends obtaining more temperature and wind data to the highest possible levels since

1. important surface synoptic features are triggered off at these high levels
2. very accurate measurements are possible at these levels
3. better long-range forecasts are assured
4. a large amount of useful information can be deduced from such data

Col. 63 During the last week of January 1958

1. temperature data derived from accelerometer experiments showed pronounced discrepancies with radiosonde data above 25 km.
2. a 4-day temperature increase of nearly 70°C. was observed around the 60 km. level over Churchill
3. advection alone is incapable of explaining the more extreme warming which occurred
4. abnormal tropospheric frontal activity existed in the vicinity of Churchill

Col. 64 The author presents evidence to show that

1. stratospheric patterns have less tilt than those in the troposphere
2. the intensity of the stratospheric Low in January 1958 diminished first near the 40 km. level
3. the Lows in figures 10 and 11 are unrelated
4. stratospheric patterns in the January 1958 case moved slowly eastward

Col. 65 In regard to the January 1958 case, the joint consideration of 30 km. and the broader scale 10 mb. charts showed:

1. a northerly motion of the important stratospheric features
2. subsidence to be an important factor in the explosive warming
3. the existence of a relatively cold Low in the vicinity of Churchill
4. little correspondence concerning features in the vicinity of Churchill

Col. 66 Mark all correct answers. Using hodograph analyses and auxiliary data the author concludes:

1. the mid-latitude jet stream had its maximum strength at 33 km.
2. cold air was centered west of Churchill in the 33- to 51-km. layer
3. the rather pronounced veering of the wind at 45 km. as shown in figure 8 is reasonable
4. the cold air was centered directly over Churchill at 33 km.

Col. 67 Concerning the accuracy of the data used in the four cases dealt with in this paper

1. sphere accelerometer temperature errors are likely more than 10 pct.
2. data from sphere accelerometers are unreliable above 80 km.
3. the range of errors of the grenade experiment data below 75 km. is less than 3°C for temperatures
4. static tube temperature errors are less than 2°C at 80 km.

Col. 68 The July and August 1957 cases showed:

1. simultaneous warming in the tropospheric and stratospheric layers
2. double temperature maxima at the top of the mesosphere
3. much lower upper mesosphere temperatures than the winter cases
4. only slight similarities

Col. 69 The December case distinguished itself from the summer cases by

1. the evidence of the existence of violent mesospheric storms
2. pronounced cooling in the lower stratosphere
3. the regularity of the temperature patterns of the winter mesosphere
4. a much higher tropopause

Col. 70 Highly variable west winds near the mesopause in the summer cases suggests:

1. large errors in the data
2. intense cellular circulations near the mesopause
3. violent storm activity throughout the mesopause
4. even lower temperatures above the mesopause

Welcome to the Weather Bureau

William H. Barber, Student Trainee, Central Office
Roy R. Benning, Meteorological Technician, Great Falls
Herbert W. Billings, *Warehouseman, Anchorage*
Ezral R. Broers, Electronic Maintenance Technician, Des Moines
Irma M. Brt, Personnel Management Assistant, Kansas City
Wendell E. Burt, Electronic Maintenance Technician, Milwaukee
William S. Callahan, Supervisory Meteorologist, Miami
Archie S. Carmichael, Meteorological Technician, Memphis
Robert J. Colarusso, Meteorological Technician, Central Office
Gordon P. Colburn, Meteorological Technician, Central Office
John W. Cunningham, Jr., Meteorological Technician, Miami
Virginia B. Denton, Teletypist, Kansas City
James L. Dicke, Meteorologist, Eniwetok
Helen M. Duke, Clerk-Stenographer, New York
Gilbert W. Ehrsam, Personnel Officer, Asheville
Robert L. Emerson, Meteorological Technician, Denver
Ann E. Foster, Clerk-Stenographer, Chicago
Gerald S. French, Meteorologist, Wilmington, N.C.
Orville V. Gattrell, Meteorological Technician, Eniwetok
Walter Gilbert, Electronic Technician, New York
Bobby W. Goodwin, Meteorological Technician, Central Office
Russell S. Grasso, Electronic Technician, New York
Paul R, Gullick, Meteorological Technician, New Orleans
Harry C. Hamlin, Meteorological Technician, Muskegon
Irma M. Hammonds, Accounting and Fiscal Clerk, Kansas City
Leo P. Harris, Electronic Technician, Boston
James R. Henley, Electronic Maintenance Technician, Spokane
Dewain Leon Hilliard, Meteorological Technician, International Falls
DeWayne I. Hoffman, Meteorological Technician, San Francisco
Roy D. Homer, Jr., Meteorological Technician, Central Office
Merlin J. Houpe, Meteorological Technician, Buffalo
George D. Hovenden, Meteorological Technician, Central Office
William B. Hovey, Meteorologist, Boston
Beverly D. Jackson, Clerk-Typist, Central Office
Carl Paul Johnson, Meteorological Technician, Central Office
Lee D. Johnson, Electronic Development Technician, Central Office
Luther B. Johnson, Jr., Electronic Technician, Greenville, S.C.
Robert H. Johnson, Jr., Electronic Technician, Roanoke, Va.
Winnie M. Jones, Clerk-Stenographer, Jackson, Tenn.
Jack Kaplan, Meteorological Technician, Miami
Delora W. Kasavage, Teletypist, Portland
Jun Junnosuke Kawakami, Meteorologist, Anchorage
James G. Kieffer, Electronic Maintenance Technician, Chicago
George J. Kitazaki, Meteorological Technician, Honolulu
Seymour Kotchek, Position Classification Specialist, Central Office
Kay Charles Kraft, Placement Specialist, Central Office
Ronald E. Kuhn, Meteorological Technician, Huntington, W. Va.
Otis Lamar, Electronic Maintenance Technician, Eniwetok
Millard A. Landers, Meteorological Technician, Fairbanks
Edward J. Landry, Meteorological Technician, Chicago
Orla G. Lang, Meteorological Technician, Detroit
Alfred C. LaPolla, General Supply Assistant, New York
Boyd B. Leadbetter, Meteorological Technician, Washington,D.C.
David C. Levitov, Teletypist, Washington, D.C.
Samuel O. Lewis, Accounting and Fiscal Clerk, Central Office
Carl H. Lindahl, Meteorological Technician, Minneapolis
Harold Stuart Lorah, Meteorological Technician, Columbia, Mo.
Isaac W. Lord, Meteorological Technician, Fairbanks
Paul J. Marley, Meteorological Technician, New York
Charles H. Martin, Meteorological Technician, Central Office
Charles N. McGee, Electronic Maintenance Technician, Little Rock
Clarence D. McKenny, Meteorological Technician, Fort Huachuca
James P. Monaghan, Meteorological Technician, Central Office
Hubert H. Monahan, Meteorologist, Boston
Henry A. Mooney, Meteorological Technician, Mobile
Mary Ann Mosedale, Clerk-Typist, Central Office
Harvey D. Neal, Meteorological Technician, Denver
Robert E. Newton, Electronic Technician, Burlington, Vt.
George M. Nikaido, Teletypist, Honolulu
Edward A. Oslin, Meteorological Technician, Jacksonville
Stephen R. Phelps, Meteorological Technician, New York
Elizabeth C. Pilley, Time, Leave, and Payroll Clerk, Anchorage
Della Anne Carter Pope, Clerk-Typist, Central Office
Steven Quon, Electronic Accounting Machine Operator, San Francisco
William M. Reed, Meteorologist, Hartford
Kay Anne Renken, Clerk-Typist, Central Office
Ladye Irene Reynolds, Clerk-Stenographer, Fort Worth
Clell D. Richards, Electronic Maintenance Technician, Wichita
Betty Jane Schaumleffle, Administrative Assistant, Central Office
Ralph R. Schollenberger, Teletypist, Central Office
Don Lorenzo Scott, Library Assistant, Central Office
John E. Shelton, Electronic Maintenance Technician, Jacksonville
Charles W. Shepard, Mail and File Clerk, New York
Peter Theodore Sintetos, Instrument Maker, Central Office
Lewis W. Snyder, Teletypist, Central Office
William G. Sooter, Meteorological Technician, Kansas City
Dwight R. Stoffer, Meteorologist, Central Office
Oscar R. Stone, Meteorological Technician, Central Office
Robert L. Storey, Meteorological Technician, San Francisco
Robert W. Titus, Meteorologist, Las Vegas
Lloyd R. Toerpe, Meteorological Technician, Buffalo
Robert Vasek, Meteorologist, Honolulu
Jimmy Whittemore, Meteorological Technician, New York
David L. Williams, Jr., Electronic Equipment Inspector, Philadelphia

Transfers

	From	To
Takis A. Abramides	Oklahoma City	New York
Frank A. Alfieri	Miami	Jacksonville
Billy D. Allen	International Falls	Honolulu
Charles L. Anderson	Meridian, Miss.	Kwajalein
Ronald M. Aranita	Honolulu	Lihue, Hawaii
Richard W. Asper	Salt Lake City	Wendover, Utah
Bruce O. Barnes	North Platte	Kahului, Hawaii
Dale A. Black	Burrwood	Lake Charles
James T. Bradley	Chicago	New York
Alfonso Castaneda	El Paso	Brownsville
Frank E. Christensen	Miami	Central Office
Arthur O. Clark, Jr.	New Orleans	Midland
Frederick D. Cothran	Brownsville	Chattanooga
Thomas C. Council	Hartford	Central Office
Fredric L. Darling	Miami	Central Office
Bernard Dubofsky	Central Office	Salt Lake City
Martin O. Ehredt	Kotzebue	Barrow, Alaska
Sibyl R. Ehredt	Kotzebue	Barrow, Alaska
Robert E. Fennell	Sioux Falls	Kansas City
Michael W. Frederick	Central Office	San Francisco
Carl J. Garczynski	Antarctica	Los Angeles
Earl H. Gillette, Jr.	New York	Boston
William J. Graves	Baltimore	Central Office
William L. Hamlin	San Antonio	Corpus Christi
James A. Harding III	Barrow	Nome
Robert W. Harrington	McGrath, Alaska	New York
Allan K. Harty	Miami	Johnston Island
Harvey E. Hastrup	Canton Island	Honolulu
Victor W. Hoffman	El Paso	Fort Worth
Joseph O. Holloway	Kansas City	El Paso
Thomas J. Holmes	Antarctica	Las Vegas
Frances N. Kenny	Erie	Pittsburgh
Eugene W. Kilgore	Boston	New York
Thomas Laufer	Raleigh	New York
Alexander C. Middleton	Yap	Central Office
Noboru Miyashiro	San Francisco	Honolulu
William P. Nash	Central Office	Atlanta
Nichima Orlando	Truk	Ponape
A. Boyd Pack	Huron, S. Dak.	Ithaca, N.Y.
Joseph B. Pentecost	Point Arguello	Johnston Island
Carl M. Peterson	Rockford, Ill.	Kahului, Hawaii
Barton F. Pinson	Eniwetok	Oakland, Calif.
Carmine J. Pisano	Wendover, Utah	Burbank
Robert W. Pridgen	Barrow	Asheville
Kenneth W. Richardson	San Juan	El Paso
Michael J. Scarpa	Central Office	New York
Woodford W. Schafer	Pittsburgh	Sterling, Va.
Charles O. Seiler	San Francisco	Johnston Island
Harold A. Standen	Kwajalein	Sacramento
Jack Steagall	Antarctica	Huntsville
Charles G. Stephens	Lake Charles	Kansas City
Bob J. Stringer	Waco	El Paso
Thomas T. Tatekawa	Kwajalein	Ponape
Raymond T. Terada	Johnston Island	Honolulu
Harvey A. Teyler	Glasgow, Mont.	Bismarck
Eugene F. Thompson	El Paso	Oklahoma City
James E. Toler	Columbus, O.	Wake Island
Nathan S. Waldrop	Oklahoma City	El Paso
Oliver L. Wattenbarger	Athens, Ga.	Eniwetok
Don K. Weidner	Brownsville	Port Arthur
Warren K. Wilhelm	Central Office	Melbourne, Australia
Aaron L. Zimmerman	Sacramento	Corvallis, Ore.

Briefs from the CO Staff Conferences

The functions of the new office of Assistant Secretary of Commerce for Science and Technology were outlined for the staff. The purpose of the new Assistant Secretaryship is to strengthen science and technology, to give it recognition at the Departmental level, and to have a full-time spokesman and representative available at the Department all of the time. The new office is not designed to absorb or curtail the functions of the respective bureaus, nor to weaken their initiative, nor to administer their functions. The Secretary and Under Secretary will still be accessible to bureau directors at all times.

The Weather Bureau appeared before the House Subcommittee on Appropriations on February 13, 1962. Most of the questions were directed toward statistical data, such as positions, man-years, and dollars. For the first time in recent years, the complete justifications for each of the Bureau's four appropriations were introduced into the record.

Mr. Carlin of the Training Section reported on the Advanced Study Group program and proposed that a course in forecasting be substituted for one of the two Advanced Study Groups held each year. The Advanced Study Groups were designed for Meteorologists in Charge, and the MIC's of most large field offices are among the program's 100 graduates. The forecasting course would last two months, so that two classes could be held each year in place of one four-month Advanced Study Group. OFDEV is helping to prepare the course, and it is proposed that they assume the teaching load. The staff agreed that Mr. Carlin's proposal should be carried out.

Mr. Harmantas reported on the recent CIMO meeting in New Delhi. Thirty-one countries were represented, and the conference was highly successful. Mr. Harmantas also reported that the Japanese have made headway in their upper-air program by their willingness to pay the high cost of expendable transponders (in Japan, the equivalent of 50 U.S. dollars per unit). The Japanese are using this manually at four of their stations. The fifth station has an automatic computer, which records simultaneously the instantaneous height, wind direction, and wind speed.

The staff was informed of plans for a major international conference on the "Application of Science and Technology for the Benefit of Less Developed Countries," to be held under United Nations auspices in Geneva in August 1962. Dr. Edward Fei, Executive Director of the Science Conference Staff of the State Department, is in charge of the overall United States preparations.

Mr. D.S. Johnson reported that recruitment for Meteorological Satellite Activities is progressing well, with 114 employees now on the rolls. The data system design for the Nimbus satellite is nearly completed.

Dr. Reichelderfer presented Gold Medals for Exceptional Service to Vaughn Rockney and Robert H. Simpson, who were unable to attend the Commerce Awards ceremony on February 14.

Volume 21 MARCH 1962 Number 3

CONTENTS

Topigrams	42
Project Mercury Weather Support Group	43-46
The Story of a Flood	47-51
ELTANIN Prepares for Antarctic Cruise	52-53
News from the Field	54
TOPICS Tips	54
Status of EMF	55-57
Length of Service Awards	58
New MIC at Atlanta	58
Retirement: Disability or Optional?	59
Advanced Study Group	59
Hartford Aviation Weather Seminar	59
RAO Employee Catches Thief of Bureau Car	60
Retirements	60
Meteorological Readings	61
Welcome to the Weather Bureau	62
Transfers	62
Briefs from the CO Staff Conferences	63

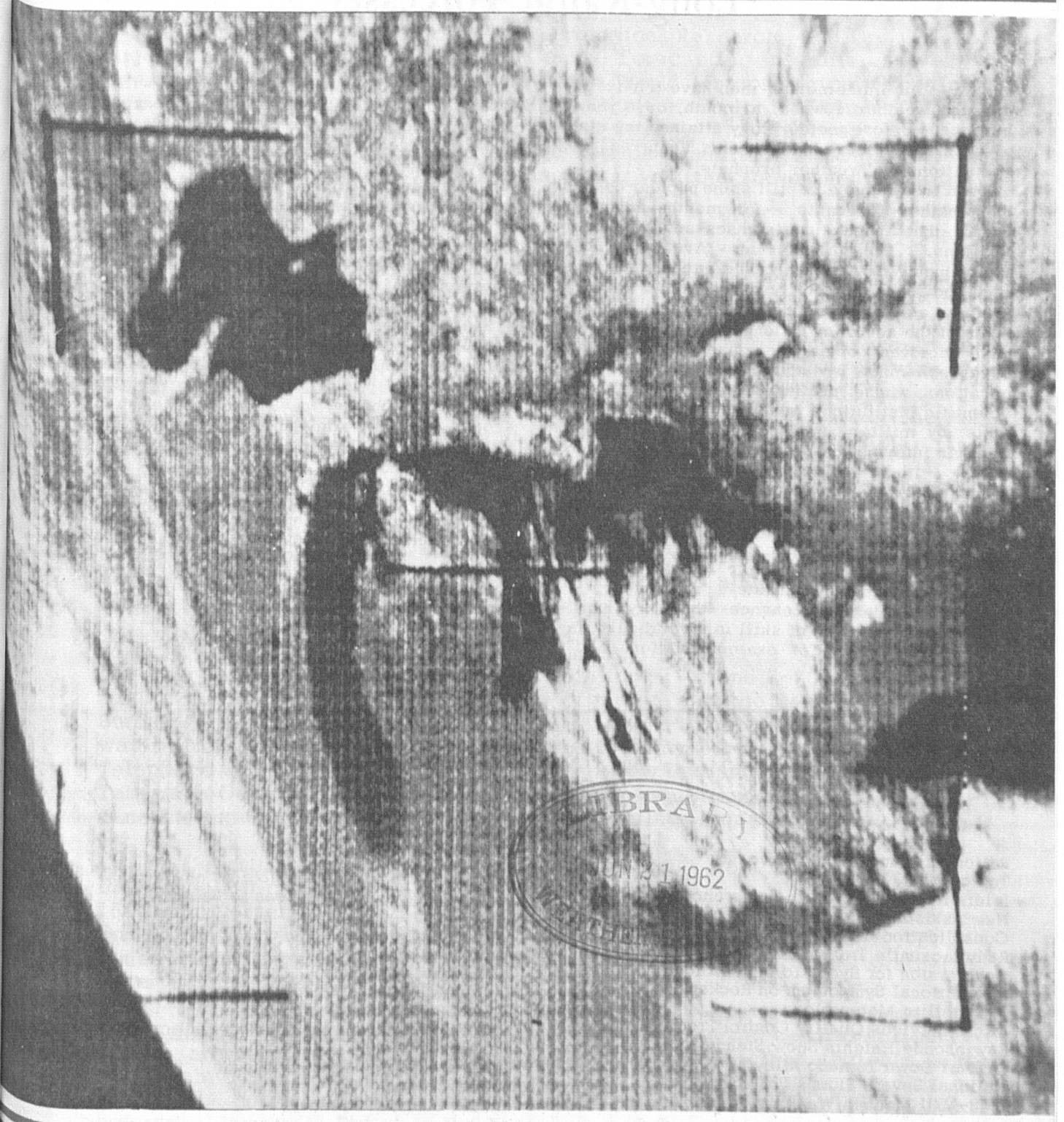
WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.

U.S. Weather Bureau.

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

TOPICS

Volume 21 APRIL - MAY 1962



LIBRARY
JUN 21 1962
WEATHER

The Great Lakes as seen by TIROS IV

Editorial

Long-Range Forecasts

Since time immemorial, men have tried to predict the weather a week, a month, or a year in advance. Before meteorology attained the status of a science, seers and oracles acquired great reputations as "weather prophets."

Even today, there is still some popular belief in the weather forecasts --for months and years ahead--that appear in almanacs and other publications. The question is: Are their "hits" pure chance or are they based on special knowledge and skill in foretelling the weather?

Many tests, or "verification checks," have been made of the accuracy of long-range forecasts that have received popular acceptance. These tests have been made by industries and business corporations whose profits depend on weather; by scientific institutions interested only in finding the facts; by military services which need advance weather information for strategic planning; and by many other impartial agencies. In specific day - by - day or week - by - week predictions published more than a week in advance, the tests have found no evidence of skill beyond that based on climatological analysis.

Why, then, do many people believe that long-range forecasts are accurate?

First, the element of chance--the lucky "hits"--gives the impression of skill in a relatively large number of cases. For example, a "forecast" of fair weather for every day of the year will verify with 70% accuracy or better in most parts of the country, because most localities have weather that is "fair" at least two-thirds of the time.

Second, many people who use the long-range forecasts derive satisfaction from feeling that they know in advance what the weather will be. But they fail to keep a reliable record of the outcome. Their impression of the accuracy of long-range forecasts is likely to be more favorable than their impression of short-range forecasts, because the short-range prediction can more readily be compared to the actual weather.

Third, there are people who are relatively credulous about predictions of any kind--forecasts, horoscopes, or clairvoyance and crystal balls. Many metropolitan newspapers publish horoscopes because some of their readers demand them, although the editors may admit their disbelief in astrology.

These are only a few of the factors that contribute to the popularity of some long-range weather forecasts.

The best proof of any forecast is a careful day-by-day comparison between the prediction and the actual weather, judged in relation to the "hits" to be expected by chance.

F.W.R.

CONTENTS

Editorial: Long-Range Forecasts	66
Topigrams	67
Briefs from the CO Staff Conferences	68
New Assistant Secretary of Commerce	69
Consolidation of Record Processing	70
Radiofacsimile Transmission of TIROS Data	70
Commission for Synoptic Meteorology	71-72
International Symposium on Rocket and Satellite Meteorology	72
Flight Services Quality Control Program	73
Rawinsonde Heights Show Steady Increase	73
"A Dart Down Tornado Alley"	74-76
National Severe Storms Project	75
AMS-AGU Meet in Washington	76
New MIC's	77
Area Agricultural Meteorologists on Duty	77
Regulations Restrict Access to Personnel Folders	77
Nags Head Observer Describes March Storm	78
Retirements	79-81
Pike's Peak or Bust!	79
Colorado Amateur Radio Weather Net	80
Length of Service Awards	80
Public Service Awards	81
Obituary	81
Welcome to the Weather Bureau	82
Transfers	82
Meteorological Readings	83

Topigrams

Washington, D.C.
April-May, 1962

Dr. Harry Wexler, Director of Meteorological Research, and Dr. V.A. Bugaev, Director of the U.S.S.R.'s Central Forecasting Institute, served as advisers to the Secretary-General of the World Meteorological Organization in developing a program for achieving the meteorological aims of the U.N. Resolution on Peaceful Uses of Outer Space. The plan was reviewed by the WMO's Executive Committee and will be submitted to the July meeting of the U.N. Economic and Social Council. It will then be presented to the U.N. General Assembly in September.

On May 23, Secretary Hodges, Assistant Secretary Hollomon, Dr. Reichelderfer, and Dr. A.V. Astin, Director of the National Bureau of Standards, appeared before the House Post Office and Civil Service Committee in support of the proposed Federal Salary Reform Act of 1962. Under this legislation, the statutory limitation on the number of supergrades would be removed, and approval of these grades would rest with the Civil Service Commission. Grades GS-19 and 20 would be established by the President on the basis of recommendations by the Civil Service Commission. The act contains no provision for increasing the number of P.L. 313 positions.

Dr. S. Fred Singer, one of the nation's leading space physicists, has been appointed Director of Meteorological Satellite Activities. In the 1940's, he participated in early U.S. rocket flights and high-altitude research. More recently, he has published a number of papers on the design and use of artificial earth satellites, including their application to meteorology.

From May 29 through the end of November, residents of the Boston area can hear the latest marine forecasts by dialing RIchmond 7-7000. The two-minute forecasts, recorded by members of the staff of the Boston Weather Bureau Airport Station, cover Boston Harbor and adjacent waters and the waters from Eastport to Block Island. The Weather Bureau, the American Telephone and Telegraph Company, and the New England Telephone and Telegraph Company are cooperating in the six-month experiment to determine the extent of public interest in such detailed forecasts.

The Department of Commerce has proposed to the Post Office Department that a special commemorative stamp be issued on May 2, 1964, to mark the 150th anniversary of broad-scale weather observations in the United States. On that date in 1814, the Surgeon-General of the United States Army, Dr. James Tilton, issued an order directing hospital surgeons to take weather observations.

Experimental television programs, originating from the Central Office TV studio, are being carried three times daily by WETA-TV, Washington's educational television station. The broadcasts are designed for school children and will be continued until school closes in June. During the five-minute programs, James C. Fidler of the Forecasts and Synoptic Reports Division briefly outlines the current weather situation and explains, in simple terms, how and why the weather is expected to change.

Briefs from the CO Staff Conferences

The Bureau of the Budget report on "Government Contracting for Research and Development" recommends that each agency review the organization and management of its research and development programs. The report suggests that management controls be simplified, unnecessary echelons of review and supervision be eliminated, and steps be taken to increase the efficiency, flexibility, and economy of research and development operations. The White House has asked each agency to report within six months on progress made in carrying out the actions recommended in the report.

It was announced to the staff that the White House has established a Panel on Civil Technology, under the joint auspices of the President's Special Assistant for Science and Technology, the Chairman of the Council of Economic Advisors, and the Secretary of Commerce. The Panel is examining means to stimulate civilian research and development and to make more effective use of existing technology.

George B. Gardiner, Special Assistant to the Secretary of Commerce, has been designated as the Department's coordinating officer for the U.N. Conference on "Application of Science and Technology for the Benefit of Less Developed Countries." The Weather Bureau will assist in preparing the U.S. position at the Conference.

Officials of the Weather Bureau, the State Department, and the Martin-Marietta Company have discussed the establishment in the Southern Hemisphere of a series of nuclear-powered automatic weather stations that would transmit reports directly to a satellite.

The staff discussed the Bureau of the Budget report, "Survey of Federal Meteorological Activities." (An article on the report will appear in the next issue of TOPICS.) The Budget Bureau is now preparing recommendations based on its survey.

Dr. Landsberg reported that the new Monthly Climatological Normals for the period 1931-1960 have been published and are being distributed. This is the first step toward completion of the Decennial Census of U.S. Climate.

The use of overtime in field service programs in support of severe weather warnings and advices was reviewed. The consensus was that this matter is being handled judiciously by the Regional Administrative Officers.

Planning for supersonic flying has demonstrated the need for upper-air climatological compilations to 100,000 feet, which the Office of Climatology estimates will cost $50,000. The staff discussed possible means of funding for this project and agreed that it should be considered with other requests against the R&D contingency fund.

The opinion has been expressed that there has been a decline in the heights reached in PIBALS over the past few years. O&SF will study the facts in this matter. It was suggested that O&SF consider the possibility of an incentives program for excellence in PIBALS.

New Assistant Secretary Appointed To Guide Commerce Scientific Programs

Dr. John Herbert Hollomon has been named by President Kennedy to the new post of Assistant Secretary of Commerce for Science and Technology. His appointment was confirmed by the Senate on April 19.

In this newly created position, Dr. Hollomon serves as principal advisor to the Secretary of Commerce on all scientific and technical matters of concern to the Department. The Weather Bureau, National Bureau of Standards, Coast and Geodetic Survey, Patent Office, and the United States Science Exposition are subject to policy direction and coordination by the new Assistant Secretary.

Dr. Hollomon was born in Norfolk, Virginia, on March 12, 1919. He received his B. S. and D. Sc. degrees from the Massachusetts Institute of Technology, and served as a research associate at MIT from 1940 to 1941. He then taught at Harvard University's Graduate School of Engineering until he entered the U. S. Army in 1942. He was awarded the Legion of Merit in 1945 for his services as Chief of Physical Metallurgical Research at the Watertown Arsenal, Watertown, N. Y., and was discharged as a major in 1946.

Since 1946, Dr. Hollomon has been associated with the General Electric Company. At the time of his appointment as Assistant Secretary of Commerce, he was General Manager of GE's General Engineering Department.

Dr. Hollomon is a member of the Development Assistance Panel and the Scientific and Technological Manpower Panel of the President's Science Advisory Committee; Chairman of the Engineering Research Committee of the Engineers Joint Council; member of the U. S. Army's Scientific Advisory Panel; and member of the Commission of Engineering Education.

Dr. Hollomon has been an Adjunct Professor of Metallurgy at Rensselaer Polytechnic Institute and has served in advisory educational posts at Cornell, Harvard, and the Massachusetts Institute of Technology. He is the author of a textbook on metallurgy and has written or co-authored more than 50 articles in professional journals. Among his many honors are: the Rossiter W. Raymond Award of the AIME, 1956; Alfred Nobel Award of the Combined Engineering Societies of the U.S., 1947; the Rosenhain Medal for outstanding contributions to metallurgy, the Institute of Metals of England, 1958.

Dr. Hollomon is married to the former Margaret Knox Wheeler of San Mateo, California, and they have four children.

Dr. J. Herbert Hollomon

Processing of Climatological Records To Be Consolidated at Asheville Center

The Weather Bureau plans to consolidate all processing of climatological records at the National Weather Records Center in Asheville.

Since its establishment in 1952, the NWRC has served as the United States' official meteorological archives. Data gathered by the Weather Bureau, the military services, and other cooperating organizations are deposited there to be summarized for use in research and for commercial applications. To handle this specialized work, the NWRC has modern high-speed data-processing equipment.

The routine processing of climatological records for publication, which has been done at the Weather Records Processing Centers, will now be moved to the National Weather Records Center. The three WRPC's--at Chattanooga, Kansas City, and San Francisco--have used punched card techniques to process data.

The transfer of processing activities from the three WRPC's involves about 100 employees--30 at both Chattanooga and Kansas City and 40 at San Francisco. Every effort will be made to reassign these employees to suitable positions at Asheville or other Bureau installations.

Over the years, the three WRPC's have tended to employ somewhat different processing procedures. Although each center has at least one of each basic type of machine, their workloads are different, often making it necessary to use the least-loaded piece of equipment rather than the most ideal one. Consolidation will result in one standard procedure for all records of the same type.

On many occasions, there has been a need for records when they were in transit to the NWRC after processing at one of the local centers. Consolidation will make current records more readily available at all times.

Moving the entire program to Asheville will, to a large degree, smooth out the peak annual load at the present centers. The NWRC has so much more potential that the extra work will be just one more non-routine job.

The location of all processing near the NWRC printing plant will permit the earliest possible publication of data. In addition, all problems related to the photographic copy can be resolved locally.

Administration will be simplified by the consolidation. The entire program will be administered by the NWRC under the direction of the Office of Climatology. Management of station networks will be moved from the WRPC's to the Regional Administrative Offices, where they can be controlled by the Observations and Station Facilities Division.

Most important, the greater capabilities of the equipment at Asheville will increase efficiency and permit the development of new and more useful by-products of the routine processing.

Overseas Radiofacsimile On Trial

On April 15, the Weather Bureau began international radiofacsimile transmission of cloud maps based on TIROS IV photographs.

With compatible receiving equipment, users in Europe, South America, Africa, the Far East, and the Southwest Pacific can receive these transmissions to supplement the coded analyses routinely sent on international radioteletypewriter networks.

From the National Meteorological Center at Suitland, Maryland, the TIROS neph-analyses are sent by land lines to New York and San Francisco, where they are broadcast internationally by commercial firms under contract to the Bureau.

The broadcasts also include all material normally carried on the High-Altitude Facsimile Network. These transmissions originate from Anchorage, San Francisco, Miami, Idlewild, and Suitland and are rebroadcast internationally from New York and San Francisco.

Broadcasts to Europe can be received by stations at Paris, London, Oslo, Stockholm, Brussels, Berne, Frankfurt, Rome, Budapest, Cairo, and Moscow. Broadcasts to South America can be received over all of Central and South America, west to Mexico City and east as far as Dakar, Senegal, and Cape Town, South Africa. Broadcasts to Tokyo and Sydney also reach Manila, Shanghai, Seoul, Taipei, Okinawa, most of Australia, New Zealand, and the islands of the southwest and central Pacific. A separate broadcast from San Francisco is directed to Honolulu.

Decoding the analyses sent by radioteletypewriter is tedious and time-consuming, and much detail is lost in the process. Radiofacsimile transmission of the actual maps gives meteorologists in other nations a clear and immediate picture of the cloud patterns seen by the TIROS weather satellite. They can then use the maps to improve weather analyses and forecasts, to give warning of previously undetected storms, and to brief pilots on the weather over trans-oceanic flight routes.

The broadcasts will be conducted on an experimental basis for eight to ten weeks.

WMO Commission for Synoptic Meteorology

The WMO Commission for Synoptic Meteorology closed its 25-day meeting in Washington, D. C., on April 19. Ninety technical experts from 40 nations attended the session and resolved many problems in reporting, coding, and transmission of weather data.

The United States' delegation was headed by Edward M. Vernon, Chief of the Bureau's Forecasts and Synoptic Reports Division. He was assisted by three delegates -- S.R. Barbagallo, U.S. Weather Bureau; Charles Reeves, U. S. Weather Bureau; and Leonard Snellman, Air Weather Service--and three advisers--Captain W. R. Franklin, Navy Weather Service; W. C. Huyler, Air Weather Service; and George G. Sink, Federal Aviation Agency.

Jerome Namias, Chief of the Bureau's Extended Forecast Branch, attended the session as official observer for the International Council of Scientific Unions. A. E. Sik, of the Forecasts and Synoptic Reports Division, represented the Commission for Maritime Meteorology and Austen H. Nagle, of the Office of International Meteorological Plans, served as representative from the Commission for Aeronautical Meteorology.

On the opening day, March 26, the delegates were welcomed by the Honorable Harlan Cleveland, Assistant Secretary of State for International Organization Affairs. Dr. F. W. Reichelderfer, Chief of the Weather Bureau, spoke at the first session, inviting the members to visit the Weather Bureau while they were in Washington. Paul H. Kutschenreuter, Assistant Chief of the Bureau and President of the Commission, then delivered his Presidential Address.

The Commission approved plans to set up a Southern Hemisphere Weather Communications Network, linking Nairobi, Melbourne, and Brasilia, to supplement the network now operating in the Northern Hemisphere. Eventually, the two networks will be joined to form an unbroken chain of point-to-point radioteletypewriter and landline teletypewriter circuits. Each of the five Northern Hemisphere and three Southern Hemisphere communication centers will be able to receive weather information from each of the other centers directly or by relay.

The Working Group on Synoptic Use of Meteorological Data from Artificial Satellites, head-

---

The delegation and I wish to thank those who did so much to make the members of the Commission for Synoptic Meteorology feel at home in Washington--the D.C. Branch of the AMS which arranged the sightseeing tour and supported the picnic, the Weather Bureau Club which provided refreshments for the picnic, and all the meteorologists of the Washington area who participated in the various hospitality programs.

Paul H. Kutschenreuter

---

ed by Donald M. Hanson of the Weather Bureau, noted that existing communications systems are overtaxed by the comparatively small volume of TIROS data and recommended the development of additional capability, especially facsimile facilities.

New officers elected at the session are Dr. S. N. Sen of India, President, and Dr. Konstantin T. Logvinov of the U.S.S.R., Vice President.

During the meetings, the Weather Bureau unveiled its new experimental closed circuit TV system, VIDMET. A television receiver, set up in the delegates' lounge at the State Department, showed a continuous picture of weather in the United States and around the world. Some pictures taken by TIROS IV were flashed over VIDMET and associated with current weather conditions.

Social activities arranged for the CSM included the official reception, a dinner at the Willard Hotel, a reception at Mr. Kutschenreuter's home, and a Sunday picnic with Weather Bureau employees and members of the American Meteorological Society. In addition to touring the city, the delegates visited the National Meteorological Center, Meteorological Satellite Activities, the Weather Bureau Airport Station, Goddard Space Flight Center, and the Atlantic Research Corporation.

At the opening session of the Commission for Synoptic Meteorology, left to right: Dr. F.W. Reichelderfer; D.A. Davies, Secretary-General of the WMO; Harlan Cleveland, Assistant Secretary of State; and Paul H. Kutschenreuter.

Experts From 20 Nations Attend April Symposium On Rockets and Satellites

More than 500 participants from 20 nations attended the First International Symposium on Rocket and Satellite Meteorology, held in Washington, D. C. from April 23 to April 25. The Symposium was sponsored by the Committee on Space Research, the World Meteorological Organization, and the International Union of Geodesy and Geophysics.

Dr. Harry Wexler, Director of Meteorological Research for the Weather Bureau and one of the three chairmen, convened the Symposium. His co-chairmen were Dr. W.L. Godson, Canada, and Dr. R. Frith of the United Kingdom.

Speakers at the opening session, including Sidney Teweles and Frederick G. Finger of the Weather Bureau, presented results obtained by meteorological rockets to heights of 50 miles or more.

David S. Johnson, Deputy Director of the Weather Bureau's Meteorological Satellite Activities, opened the second meeting which was concerned with cloud studies, radiation studies, and special studies, including the development of satellite ice surveillance techniques, snow surveys by satellite, and atmospheric densities obtained from satellite motions. Weather Bureau representatives who contributed papers to this session were Lester F. Hubert, David Q. Wark, Jay S. Winston, Robert Popham, Sigmund Fritz, and Jay S. Winston. W.A. Hass and G.T. Dellert were co-authors of a paper presented by T. Fujita of the University of Chicago.

Quality Control Program Established to Monitor Bureau's Flight Services

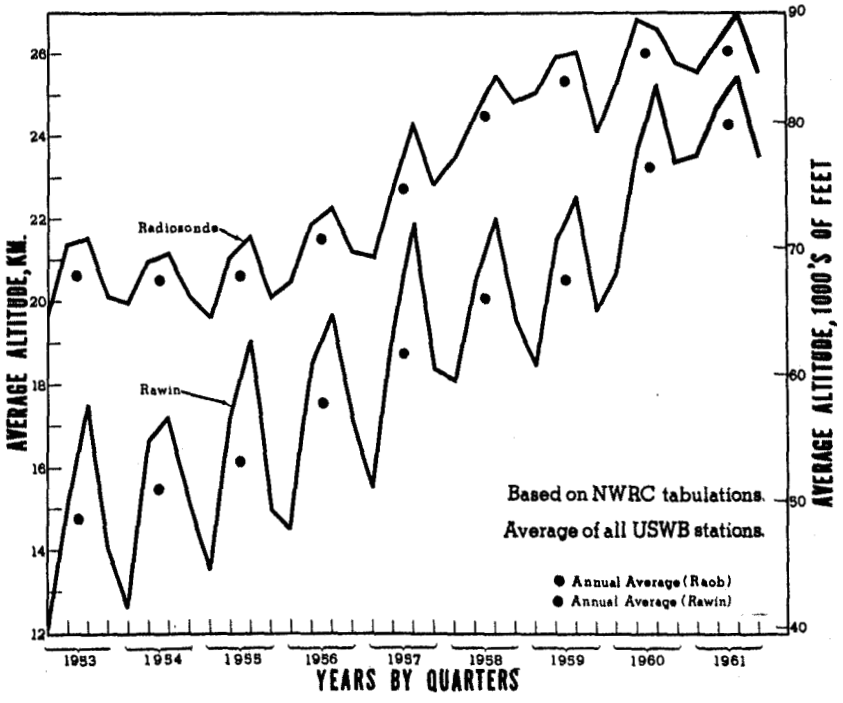
The new Flight Services Quality Control Program provided for in the Bureau's fiscal year 1962 appropriations is well underway, with 24 of the 27 Quality Control Officers already on duty. Ultimately, a Quality Control Officer will be assigned to each FAWS area.

Through the new program, the pilot weather briefing services of Weather Bureau and FAA stations, including transcribed weather broadcasts and pilots' automatic telephone weather answering services, will be continually checked for quality. The effectiveness of Flight Advisory Weather Service forecasts, for supporting weather briefing services as well as for direct use by pilots and flight operations personnel, will also be checked.

The Quality Control Officers will examine and qualify FAA Flight Service Specialists in pilot weather briefing. They will visit Weather Bureau and FAA stations to conduct quality control checks, carrying portable radios for receiving the transcribed weather broadcasts and tape recorders for monitoring aviation weather services.

To direct the new program, a Flight Services Quality Control Section has been established in the Central Office, with S. V. Wyatt as Section Chief. In addition to its quality control functions, the new section will manage the flight safety weather investigations formerly handled by the Aviation Section.

Using rental aircraft, the Flight Services Quality Control Section will conduct an expanded program of in-flight monitoring of aviation weather services. These flight operations will also provide direct liaison between the Central Office quality control staff and the Quality Control Officers in the field.



Bureau Sets Goal of 100,000 Feet For Average Rawin and Raob Height

One hundred thousand feet average raob and rawin height is the goal set for the Bureau's rawinsonde program. A look at the above graph shows our progress toward that goal.

The upper curve on the graph represents the average raob height by quarters for the past nine years; the lower curve shows the average rawin height.

The dots are annual averages and show a steady increase over the years, except for a slight decrease in raob height in 1954.

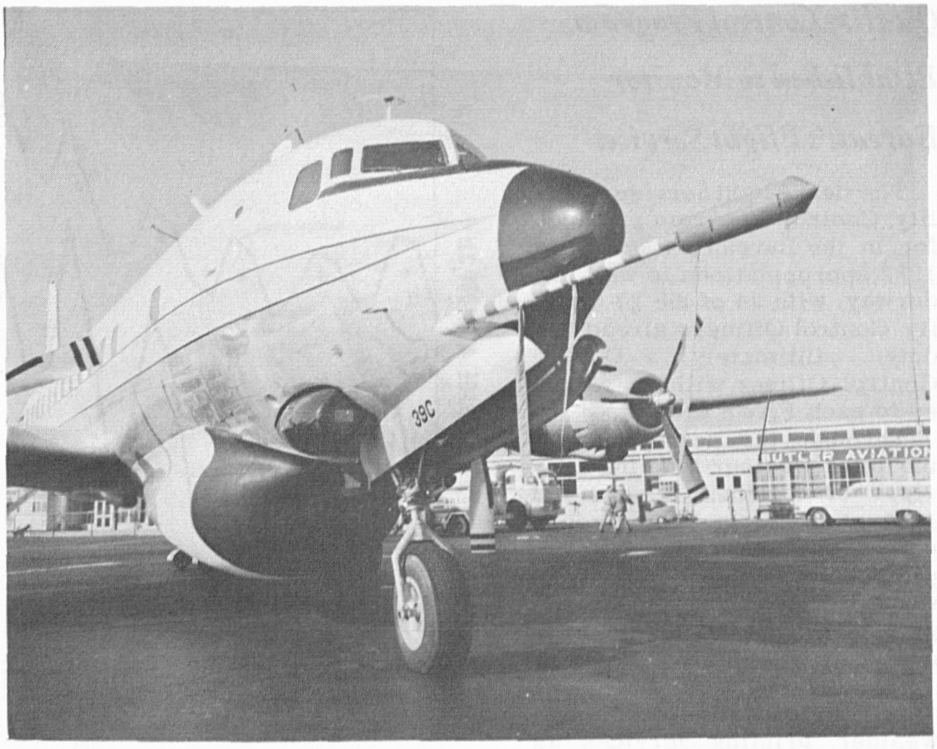
These averages include terminations for all reasons--not only for bursting. The terminating values are used in the averages even though some data may be missing in the middle of an observation. Wind data are sometimes lost for part of an observation, when limiting angles cause distortion of the tracking signal by obstructions in its path.

Raob and rawin heights vary with the seasons, being higher in summer than in winter. The rawins show larger variations because the higher winds of the winter season cause a greater incidence of limiting angles.

The rapid transition from 403-mc./sec. manually-operated tracking sets with 15° limiting angles to 1680 mc./sec. automatic-tracking sets with 6° limiting angles brought a marked increase in average rawin height in 1956. Since this transition is now complete and 1200-gram high-altitude balloons are being used at 33 stations, the average altitude should show another marked increase this year.

In late 1962, when transponder equipment becomes available at 35 stations, very little wind data should be missing because of limiting angles, and the two curves for those stations should almost coincide.

A DART DOWN TORNADO ALLEY



(The Summer 1961 issue of the United Aircraft Quarterly Bee-Hive contained an excellent article, by Robert Sanford, on the 1961 field operations of the National Severe Storms Project. The following excerpts from the article are reprinted with the permission of the United Aircraft Corporation.)

Flying 1,000 miles an hour through the dark chaos of a thunderstorm, Major John J. Knight knew he was in hail when the stones began to crash and bang against his Convair F-106 Delta Dart interceptor. He could hear the stones rattling off the special steel nose of the ship and in his mind he could see the dents developing in the leading edges of the wings. He could almost feel them. He just hoped the hailstones didn't get any bigger. The plane was bumping sharply through the unknown whorls and elevator rides at the heart of the storm. It was like riding over big cobblestones in a truck with no springs. Suddenly his left wing was wrenched up and he was almost on his side. He tried to relax--not fight it too much. He brought the wing back down as gently as he could. His helmet was bouncing against the two sides of the pointed canopy above him, and despite a tight seat belt and harness, he was being pushed around bodily inside his small cockpit. He didn't mind the bumps so much, but the hail was dangerous.

Then quite suddenly the hail ended and he was out of the storm. Sunlight streamed through his canopy; the rough stuff was over. He pulled up to above 40,000 feet and looked around. Behind him was the squall line. Its top was high above him and it stretched miles and miles on either side above the flat, red Oklahoma prairie. Some storm, he thought. Some ride!

For the major, it had been a good day. His flight through the maddening mush of the storm had not been by accident. He had penetrated the storm for the sake of weather research and aviation safety. The storms are there and someone has to find out what's inside of them.

* * *

Major Knight's plane, which belongs to the ASD at Wright-Patterson, is equipped with strain gages on the supports of the wings and stabilizer, is instrumented to measure control surface deflection, acceleration, and angle of attack, and has gyros and airfoils to measure pitch, roll, and yaw. It also is instrumented so that all of Major Knight's actions--the forces he applies to the controls--are subtracted from the data. The resulting figures the scientists have to work with are pure, just the force of the plane against the turbulence of its environment.

Some of the bigger planes have more instruments than the F-106. The Weather Bureau's DC-6's collect 18 different kinds of information as they fly and the B-57 has such

(continued on page 76)

National Severe Storms Project Begins 1962 Field Operations

The 1962 field operations of the National Severe Storms Project are now in progress, using a fleet of aircraft and a dense network of surface weather observing stations to gather new data from tornadoes, squall lines, and severe local storms in Oklahoma. The spring operations opened on April 23 and will continue through early June.

Sponsored by the Weather Bureau, the National Severe Storms Project has the active cooperation of the Aeronautical Systems Division, the Geophysics Research Laboratories, the Tactical Air Command, and the Air Weather Service (all branches of the U.S. Air Force); the U.S. Navy; the Federal Aviation Agency; the National Aeronautics and Space Administration; the Air Defense Command; Cornell Aeronautical Laboratory; and several universities.

During the 1962 season, squall line segments passing near Oklahoma City are investigated by as many as a dozen aircraft at one time. The most severe portions of the squall line thunderstorms are penetrated by specially designed planes of the Air Force Systems Command. The two storm-penetration aircraft--an F-100F and a T-33--are instrumented to measure many weather elements including total liquid water content of clouds, droplet sizes and distribution, hail sizes, temperature, humidity, electric field, and turbulence.

All four planes of the Bureau's Research Flight Facility are again participating in the spring operations. Since last season, Giannini Gust Probes for measuring horizontal and vertical turbulence have been installed on the two DC-6's and the B-57. To improve visual observations for the flight meteorologists, closed circuit TV systems have been added to the two DC-6's. On each plane, the camera is mounted atop the cabin and can be adjusted to several positions.

Other aircraft cooperating in the study are a C-130 (Geophysics Research Directorate), a WV-2 (Naval Research Laboratory), B-66's (Tactical Air Command), and a U-2 (Geophysics Research Directorate).

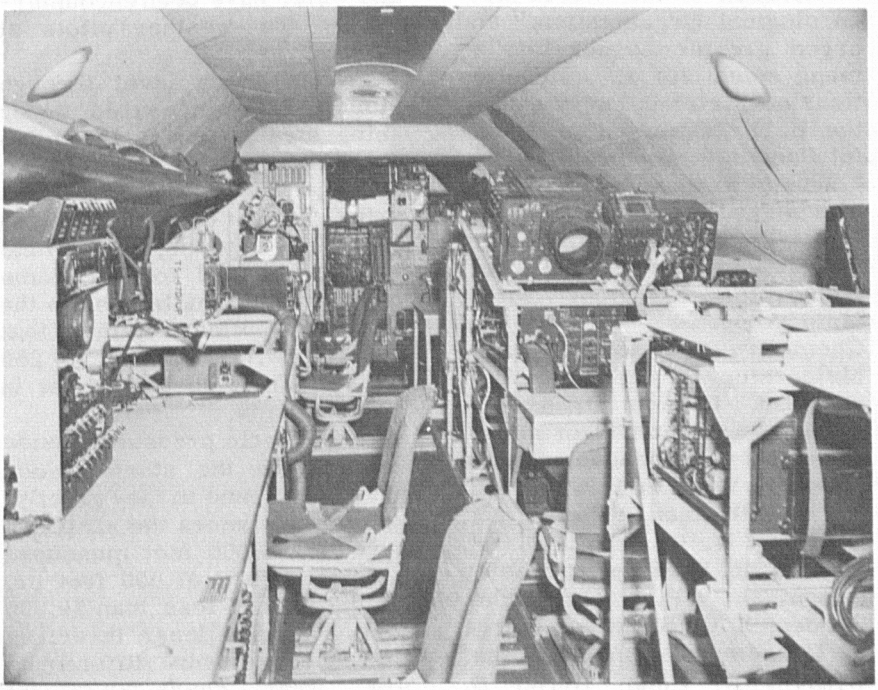
As the aircraft gather data in and around a squall line segment, they are monitored by the WSR-57 at Will Rogers Field, Oklahoma City, where the entire cloud system within a radius of 200 miles, as well as the location of all aircraft in the area, is graphically displayed on the radar console.

The WSR-57, and Air Force CPS-9, and an Air Defense Command FPS-6/10 are used simultaneously to correlate radar intensity with vertical motion within storms. The three radars are also used together to detect the presence, distribution, and sizes of hail.

The Cornell Aeronautical Laboratory is operating a pulse Doppler radar at Chickassa, Oklahoma, to measure wind speeds in conjunction with the Bureau's CW Doppler radar at Norman, Oklahoma.

In an effort to obtain some definitive data on velocities and shears encountered in squall line systems, an M-33 radar at Norman will track lightweight metallic spheres dropped into storms from aircraft.

Additional information for the study will be gathered by sferics stations, serial rawinsonde observations, and the "alpha" and "beta" networks of severe storm observing stations.



An inside view of one of the Bureau's DC-6 research aircraft. The photograph on the opposite page shows the new Giannini Gust Probe on the B-57.

AMS, Geophysical Union Hold Joint Meeting In Washington, D. C.

The American Meteorological Society's 202nd national meeting, held jointly with the Section of Meteorology of the American Geophysical Union, took place in Washington, D. C. from April 25 to 28.

Members of the two organizations discussed climatology and statistical meteorology, tropical meteorology, meteorological physics and chemistry, biometeorology, dynamical weather prediction, meteorology of the first mile, programs and plans in meteorology, and sferics and thunderstorm electricity.

Dr. F. W. Reichelderfer, Chief of the Weather Bureau, spoke on "Scientific Research in Relation to the World Meteorological Organization," and urged greater cooperation among scientists of United Nations countries in carrying out the U. N. Resolution on Peaceful Uses of Outer Space.

Weather Bureau personnel who served as session chairmen were: Dr. Helmut E. Lansberg, Climatology and Statistical Meteorology; Dwight Kline, Meteorological Physics and Chemistry; Donald H. Pack, Meteorology of the First Mile; and Dr. Gilbert D. Kinzer, Sferics and Thunderstorms.

Papers were presented by the following Weather Bureau men: R. R. Dickson, Donald M. Hanson, W. L. Schallert, P. Putnins, R. H. Simpson, Stanley Rosenthal, P. M. Kuhn, Frederick G. Shuman, George P. Cressman, Paul A. Allee, William E. Cobb, Byron B. Phillips, and B. I. Miller.

A DART DOWN TORNADO ALLEY

(continued from page 74)

gear as Doppler radar, a D-value computer, an infra-red hygrometer, and a digital recorder.

What these various planes have discovered in flights this spring and a year ago is startling enough to make meteorologists discard a number of long-accepted theories, says Clayton F. Van Thullenar, director of the severe storms project.

Inside the storms, pilots have found areas in which great concentrations of water are amassed. They say flying through these areas is like going beneath a waterfall. The most startling thing about this free water, though, is that it has been found to exist in temperatures as low as 47 degrees below zero Centigrade--47 degrees below freezing. Van Thullenar reasons that the water in such cases has been pushed up to the cold altitudes too rapidly to have had time to freeze. Big globs of slush and water have been encountered by the weather pilots at times.

Planes flying level through storms have measured winds going straight up at 150 miles an hour and in a fraction of a second have bumped into winds going straight down at 150 miles an hour. Figuring the vertical velocity needed to keep some of the biggest hailstones in the air, Van Thullenar believes that updrafts with velocities of 250 to 300 miles an hour exist in some storms.

Atmospheric pressures inside and outside the storm clouds have been found to vary greatly. In some instances the air pressure at 40,000 feet measured normal for 41,000 feet or, another time, less than 39,000 feet. Van Thullenar theorizes that these pressure differences are what cause the violent movements of air.

Circling the tops of storm cells in the B-57, pilot W.E. "Pat" Cunningham, a former Martin Company test pilot, and A.B. Arnett, the B-57 flight meteorologist, have found that jetstream winds go around the thunderstorm tops. "If you think those thunderstorms don't have some power in them, just consider that they can divert a jetstream with a velocity of 100 or 150 miles an hour," Cunningham said.

Flying around a storm top, they measured the wind on the west side, a westerly wind of 85 knots. As they went around to the south, the wind shifted to the north at 30 knots, and when they reached the east side the wind again was from the west, this time at 150 knots. The jetstream appeared to have been compressed between two storm tops and squirted out the other side. Cunningham and Arnett have found streakiness in the jetstream winds. Flying perpendicular to the jetstream flow, they have encountered wind velocity of 80 miles an hour at one point and 150 miles an hour about 30 miles away.

"Hot spots" have been found around the storms. These are areas which are six to eight to ten degrees Centigrade warmer than the normal air around them. In the hot spots the air is severely turbulent. Cunningham associates the temperature change with clear-air turbulence, a phenomenon which has been found increasingly as planes fly at high altitudes.

Pilots who have flown around the tops of the storms have been amazed by their rate of growth or decline. Major Knight tells of flying over the top of a storm, making a turn that took him about a minute, and, on approaching the storm again, finding it had grown up to 5,000 to 6,000 feet above him.

Civil Service Regulations Restrict Access To Personnel Folders

The Personnel Office frequently receives requests from employees who wish to review their own personnel folders. The official personnel folders are the property of the Civil Service Commission, and the Commission has issued strict regulations to safeguard these records.

The following excerpt from the Department of Commerce Manual of Orders describes the documents that are available for inspection:

"No employee shall be given access, directly or indirectly, to his official personnel folder, either on the premises of the personnel office or other offices to which the folder has been loaned, or anywhere else. He shall, however, be furnished information from his official personnel folder relating to dates of employment, positions held, salary received, and other factual information which is not of a restrictive nature described in FPM Chapter R1-36, or which is not deemed to be of a similar confidential nature. Individual documents of this nature which have already been executed by or sent to the employee in connection with official business (e.g., SF-57, SF-50, position descriptions, payroll change slips, etc.) may be removed from the folder and inspected by the employee in the personnel office under continuous supervision. Special care shall be exercised to prevent any alteration, destruction, or removal of any document. No other documents may be made available to the employee."

New Meteorologists in Charge At Elkins, Amarillo, and Reading

Milton N. Schmitz has been named Meteorologist in Charge of the Weather Bureau Office at Reading, Pennsylvania. Mr. Schmitz was an enlisted forecaster in the U. S. Air Force from 1941 to 1945 and attended the Air Force Forecasters School at Chanute Field, Illinois. He entered the Weather Bureau in 1946 and served briefly at East Liverpool, Ohio, and La Crosse, Wisconsin, before transferring to Green Bay, where he is now Principal Assistant. Since joining the Bureau, he has studied meteorology and related subjects at the University of Wisconsin Extension Center, St. Norbert College, and Penn State University.

Aubrey F. Tyson has been appointed Meteorologist in Charge at the new Weather Bureau Airport Station in Elkins, W. Va. A recent graduate in meteorology of Florida State College, where he studied on a Weather Bureau scholarship, Mr. Tyson joined the Bureau in 1939 at Sault Ste. Marie and served at Portland, Me., La Guardia Field, Binghamton, N. Y., Toledo, Charleston, S.C., and Charlotte, N.C., before accepting his present position.

Thomas L. Gibson, the new Meteorologist in Charge of the Amarillo Weather Bureau Airport Station, began his Bureau service as a Minor Observer in Fort Worth, later served at Dallas, Denver, Charlotte, N. C., Birmingham, Swan Island, Jackson, Miss., and Memphis, and was attached to the OCDM regional office in Denton before his appointment to Amarillo. Mr. Gibson has attended the University of Alabama, Texas Christian University, Penn State University, and the Department of Agriculture Graduate School.

New Officials in Charge are Timmy J. Therkelsen at Barter Island, and Kiyoji Tomita at Canton Island.

Area Agricultural Meteorologists Now on Duty After Training Period

With the appointment and training of the new Area Agricultural Meteorologists, the Weather Bureau's agricultural weather service is now operational.

Most of the new Agricultural Meteorologists attended courses at Iowa State University or Rutgers University and spent two weeks at the Central Office in Washington for orientation.

The new AAM's are: Ceel Van den Brink, East Lansing, Michigan; Donald J. Haddock, Weslaco, Texas; Vincent J. Valli, Tifton, Ga.; John W. Measells, Jackson, Tenn.; Lawrence C. Raniere, New Brunswick, N.J.; Aaron L. Zimmerman, Corvallis, Ore.; Creighton B. Nelson, Kimberly, Idaho; Leonard Hand, Portageville, Mo.; Oliver N. Newton, Stoneville, Miss.; Walter L. Stirm, Kearneysville, W. Va.; J. A. Riley, Memphis, Tenn.; and D. A. Downey, Keiser, Ark.

These men work with researchers at university or field experiment stations conducting technical studies on the effects of weather on agricultural activities. With the cooperation of Department of Agriculture extension workers, these studies are distributed to the farmers for practical application. The farmers, in turn, send their suggestions to the AAM's for the improvement of the program.

'The most destructive ever remembered'

Nags Head Observer Describes March Storm

"With babies in the house and the 3 ft. of water in the yard running swiftly, I decided not to leave the house even if it floated off or started to break up. We watched a house 200 ft. from us disintegrate under the force of the current."

These are the words of Reverend Frank Dinwiddie of Nags Head, N. C., an observer in the Cooperative Hurricane Reporting Network, describing the destructive Atlantic storm on March 7 of this year.

An outstanding cooperative observer, Reverend Dinwiddie provided the Weather Bureau Airport Station at Norfolk with a comprehensive report of his observations prior to and during the storm. The following are excerpts from that report.

"The gale was remarkable for its unexpected appearance, and for the constancy of its direction, N, after 0200 (on the) 7th. . . Wind before the gale was: 1100 6th, calm; 1300, WSW 3 mph; 1500, W 12 mph; 2000, NW 20 sust., 26 gusts; 2300, NW 25 sust., 35 gusts; 0300 7th, NNW 39 sust., 53 gusts."

On the morning of the 6th, heavy swells sent a slight amount of surf over the top of the beach at high water between 6 and 7 a.m., but, "There was nothing here to cause alarm, however wind was WNW gusts to 25 mph, and again the night tide produced no significant flooding. Barometer was unsteady at 29.36, and the normal expectation would be that of another cold front moving in with rising pressure.

Flooding Begins

"At 0430 7th a neighbor called to say that the business highway by their store was flooded 3 or 4 inches deep. Being sleepy I failed to take note of what should have been the most ominous portent of disaster--this flooding was occurring 3 hours before high water!"

Suggests Time Check

"In retrospect. . .I would suggest that beach observers, including myself, check the time when flooding from waves begins, and if this time is 2 (hours) or more before normal high water, sound the alarm of a major threat of imminent disaster. This applies to ocean beaches fully exposed to storm waves and beaches high enough that flooding is a rare event."

By 6:15 on the morning of the 7th, the water was 5-6 feet deep on the business highway at Nags Head, and entered the Dinwiddie yard at 6:20 a.m. ". . . (It) was knee-deep in about a minute. As it slithered across the sand in its first arrival it hissed like a giant snake. . . The new road, acting like a dam, burst on either side of us somewhere around 8 a.m. with openings 100 ft. wide and 300 ft. wide. Water poured over it a foot deep before it burst, washing roofs, walls and pier pilings over the top of raised traffic islands adjacent to my house." It was at this point that Reverend Dinwiddie made his decision to stick by the house.

"No type of rescue vehicle could approach across the breaches in the highway that had us isolated. The nearest Coast Guard duck evacuated the crew from Kill Devil Hills station and became hopelessly stuck in quicksand (we learned later). We had 2 life preservers and 1 (one) pair of boots between us."

Rescued By Helicopter

". . . by 1600 (the tide) fell 18 inches, so I could wade in the yard. For an hour I waved a red jacket in each hand to attract the helicopter. . . At 1630 the helicopter saw us and landed on a traffic island--literally an island--between the two inlets, and took us to safety. . . Commander Hines and Capt. Shrader, USCG, pilots of the helicopter which rescued us, noted that their air-speed indicator registered 70 mph as they were taking us on board. . .

"The night tide of the 7th was 7 inches lower at my residence because of the breaching of the road dam, but 4 to 10 inches higher on the other parts of the beach. The waves probably reached their maximum development during the night."

Noting that damage to the beach may be equal to the combined damage of all previous storms, Reverend Dinwiddie stated that "The principal cause of water damage was from ocean swells, generated at sea and not by the winds experienced here. . . In the Kitty Hawk-Kill Devil Hills-Nags Head area, dozens of buildings were demolished, and probably 200-300 severely damaged, many beyond repair. . .

"Erosion and channel cutting by the receding tides damaged and destroyed several homes as much as 3/4 mile from the ocean.

"The only buildings which were adequate for this storm were frame buildings on high wooden posts. Some that were 3 or 4 feet off the sand did not escape."

The gale, which damaged large areas of the East Coast, was described as "The most destructive storm of any type ever remembered along the Outer Banks between Cape Henry, Va., and Cape Hatteras, N. C., and particularly in the resort communities of Kitty Hawk, Kill Devil Hills, and Nags Head, N. C."

RETIREMENTS

Gladys S. Pigott

Mrs. Gladys Smith Pigott, a Meteorological Technician at the Weather Bureau Office in New Orleans, retired January 25. Formerly a teacher, Mrs. Pigott began her Weather Bureau career at the Regional Training Center in Atlanta in 1943 and subsequently served in Greenville, S. C., Crestview and Pensacola, Fla., before joining the New Orleans WBO staff. She attended Mississippi Southern College and received a Bachelor of Arts in Education from Tulane University. Mrs. Pigott's address is 265 South Cherry Street, Magnolia, Miss.

Leon J. Guthrie

Leon J. Guthrie, Meteorologist in Charge at the Weather Bureau Airport Station at Roswell, N. M., retired May 26 after 41 years of service with the Weather Bureau. Mr. Guthrie started with the Bureau in his home town of Fort Smith, Arkansas. His long career took him to St. Louis, Little Rock, San Francisco and Bakersfield, Calif., Dayton, and Savannah before he was assigned as MIC at Roswell in 1944. Mr. Guthrie has attended the University of Arkansas, Lincoln University in San Francisco, and the University of California at Berkeley. His address is 10643 Sun City Blvd., Sun City, Arizona.

Gilbert W. McGaw

Gilbert W. McGaw, a Meteorological Technician at the Weather Bureau Airport Station at Sheridan, Wyoming, retired May 27. A former teacher, Mr. McGaw joined the Bureau at Sheridan in 1940 and has stayed at the station throughout his career. He was educated at Nebraska Wesleyan College and Penn State University. His address is 946 North Sheridan Avenue, Sheridan, Wyoming.

William A. Bostick

William A. Bostick, an Electronic Maintenance Technician at the Little Rock Weather Bureau Airport Station, retired May 23 after 19 years of Government service. Mr. Bostick attended the Georgia School of Technology and was a civilian employee of the U. S. Army for many years before joining the Weather Bureau at Little Rock in 1959. His address is 3923 Burns Lane, Little Rock, Arkansas.

Henry W. Dyche

Henry W. Dyche, an Operations Specialist in the Physical Science Laboratory in Washington, retired March 25 after more than 30 years of Government employment. Mr. Dyche joined the Weather Bureau's Physical Research Division in 1948 after having served in the Departments of Treasury and Navy. His address is 4017 Longfellow Street, Hyattsville, Maryland.

Will O. Siedentopf

Will O. Siedentopf, Field Aide (HC) for northern California, retired April 19 after 28 years of Government service. After working for the Interior Department and the Veterans Administration, Mr. Siedentopf came to the Weather Bureau in 1937. Throughout his Bureau career, he has been stationed in California, at Los Angeles, Redding, and San Francisco. Mr. Siedentopf's address is 2909 Adeline Drive, Burlingame, California.

Nell W. Nichols

Mrs. Nell W. Nichols, a Meteorological Technician at the National Weather Records Center, Asheville, N. C., retired March 20. Before joining the Weather Bureau at Asheville in 1955, Mrs. Nichols worked for the General Accounting Office and Veterans Administration. She has attended Long Beach Junior College, the University of California at Los Angeles and Cecil's Business College. Her address is Eastwood Ave., Swannanoa, North Carolina.

Robert E. Corbin

Robert E. Corbin, a Meteorological Technician at the Weather Bureau Airport Station, Phoenix, Arizona, retired March 22. Mr. Corbin joined the Bureau in 1940 at Winslow, Arizona, and served in the Navy as a weather observer aboard a destroyer from 1942 to 1945. At the close of World War II, he returned to Winslow and remained there until 1960, when he transferred to Phoenix. He studied at the University of Colorado, University of Arizona, and Arizona State College. Mr. Corbin's address is 3421 East Harvard Street, Phoenix, Arizona.

(continued on page 81)

Pike's Peak or Bust!

Weather Bureau personnel interested in working at Colorado Springs might consider this excerpt from the station's Daily Journal.

"Private Schneider reported by mail to Observer. He returned from his attempt to reach the Peak (Pike's Peak) last evening, the large bay mule having fallen and bruised Schneider's foot. He also reports the mule gave out on the trail. This apparent giving out of the mule is undoubtedly due to the lack of control had over them by the Assistants, as the animal goes all right for the Observer in Charge, although he is some 25#(lbs.) heavier than either assistant. The Observer in Charge considers Pvt. Schneider unfit for the work of ascending the Peak during the winter months as he is young and his muscles lack the necessary hardening for the severe struggles necessary to make the ascents through the deep snows on the trail."

An entry on the following day says, in part: "The mule showed no signs of failing after one or two applications of the whip. The trail is so filled with snow, which is falling nearly every day, that it will be closed soon to animals."

These entries appeared in the Daily Journal of the Signal Corps' weather station at Colorado Springs on November 28 and 29, 1887.

Daily Weather Reports Of 'Ham' Network Aid Forecasting, Briefing

Since 1955, a network of amateur radio operators in Colorado has been reporting weather conditions daily to the Weather Bureau Forecast Center at Denver, thus augmenting the Bureau's facilities in that area. Every morning except Sunday, members of the Colorado Amateur Radio Weather Net, some of them in Wyoming, Utah, western Nebraska and southwest South Dakota, transmit their weather reports to a Net Control Station, and the collection of reports is then phone-patched through an amateur station in Denver to the Weather Bureau.

The reports are used in forecasting and are helpful in briefing pilots on cross-country flights and in answering queries from the general public. Road reports from isolated mountain areas are often included.

The net was begun by Carl F. Steffan, Guidance Forecaster at the Weather Bureau Airport Station at Denver, at the suggestion of A. W. Cook, Meteorologist in Charge at the Denver WBAS. A "ham" operator, Steffan got on his radio and talked to other "hams" and the net went into operation on September 21, 1955.

Eugene M. Link, manager of the net since 1956, has increased the number of check-ins from an average of 10 a day to 30 a day. Many members take their readings from their own weather instruments while others transmit reports received from other sources. These people--farmers, ranchers, ministers and priests, housewives, school teachers, a professional weather man, a few dentists and doctors--perform an outstanding service to the Weather Bureau and the people of the Denver area.

Length of Service Awards

35-Year Awards

E. Allen Aime
Central Office
R.C. Grubb
Central Office
Clifford McGregor
WBO, New York
Robert L. Redus
WBAS, Miami
Edgar J. Saltsman
Climat., Central Office

30-Year Awards

Wren H. Heath
WBAS, Galveston
Edward S. Sproles
Pers., Central Office
Abraham Zwecker
WBO, New York

25-Year Awards

Escal S. Bennett
WBO, Cincinnati
Philip F. Clapp
NMC, Central Office
Wendell E. Cowdrick
DMO, Kansas City
Robert L. King
WBAS, Tucson
Frank B. Mauk
DMO, Miami
Earl E. Nicholas
WBAS, Valentine, Nebr.
Keith S. Nicoson
IED, Central Office
H. Dean Parry
O&SF, Central Office
Sheldon J. Pierce
WBAS, Indianapolis
Ivory P. Rennels
WBAS, Sioux City
John P. Scanlon
NMC, Central Office
Ernest Sherrill
WBO, Vicksburg
Edward H. Tornroth
WBO, Eureka
Cora B. Williamson
Adm. Ops., Central Office

20-Year Awards

Kelly F. Anderson,
WBAS, Rochester, Minn.
Lannes D. Anderson, Jr.,
WBAS, Lake Charles
Roy L. Anderson,
WBAS, Great Falls
James F. Andrews,
NMC, Central Office
John S. Arnett,
NWRC, Asheville
Nick Bardoulas,
WBAS, Rockford, Ill.
Eugene R. Bennick,
WBAS, Phoenix
Joseph P. Berlinger,
WBAS, Sault Ste. Marie
Jane L. Brown,
RAO, Kansas City
Asahel F. Burnham,
WBAS, Missoula
Barbara Carson,
NWRC, Asheville
Howard N. Chestnut,
WBAS, Lansing
Kenneth B. Cochran,
WBAS, St. Louis
Mattie Cohen,
RAO, New York
James P. Condaxis,
RFC, St. Louis
Victor B. Cotten,
WBAS, Tallahassee
Walter S. Cox,
B & M, Central Office
Robert N. Craig,
RFC, St. Louis
Joe M. Crites,
SELS, Kansas City
Catherine J. Cullen,
F&SR, Central Office
Margaret A. Dalton,
O&SF, Central Office
Andrew J. Davis,
WBAS, Charlotte
Sam A. DeLay,
WBAS, Chattanooga
Clifton A. Englund,
WBAS, Scottsbluff
George W. Francis,
WBFC, Chicago
Arthur W. Fritz,
WBAS, Medford, Ore.
Leslie T. Gerdes,
WBAS, Peoria
William D. Gilmet,
WBAS, Alpena
Tillman F. Gladney,
DMO, Washington, D.C.
Earl S. Gray,
WRPC, Chattanooga
James R. Hadsock, Jr.,
WBAS, San Juan
Harry V. Haigh,
WBAS, Des Moines
Mary E. Hart,
RAO, Kansas City
Catherine A. Henry,
WRPC, Kansas City
Thomas A. Hill, Jr.
WBAS, San Juan
Arwin C. Hoge,
WBFC, Chicago
Frank E. Houghton,
Planning, Central Office
Marie C. Hubbard,
F&SR, Central Office
Charles K. Hunsaker,
WBAS, Toledo
William A. Joern,
WBAS, Moline, Ill.
Arnold H. Johnson,
WBAS, Minneapolis
Louis M. Jones,
WBAS, Pendleton, Ore.
Rozell B. Jones, Jr.,
POP, Central Office
Stanley J. Krowka,
WBAS, New York
Luke C. Kunkel,
WBAS, Norfolk, Nebr.
Nielo K. Lampi,
WBAS, Minneapolis
Lester B. Larson,
WBO, Walla Walla
Hugo V. Lehrer,
NWRC, Asheville
Newton A. Lieurance,
Av. Wea., Central Office
Richard F. Mason,
WBAS, Tulsa
R. Larry Mayne,
WBAS, Amarillo
Mary E. McNernie,
Adm. Ops., Central Office
James D. McQuigg,
WBAS, Colorado Springs
Thomas C. Morgan,
WBAS, New York
Cecilia J. O'Donnell,
RAO, Kansas City
Earl J. Oksendahl,
WBAS, Fargo
Barney J. Ozee,
WBAS, Fort Worth
Wayne C. Palmer,
Climat., Central Office
Josephine Poe,
B & M, Central Office
Clarence W. Reynolds,
Av. Wea., Central Office
Mace P. Richter,
Adm. Ops., Central Office
Delbert W. Robertson,
WRPC, Chattanooga
Wilton R. Rodgers,
WBAS, Huntsville
Leo J. Sansregret, Jr.,
WBAS, Portland, Ore.
Iler M. Schaub,
F&SR, Central Office
Marshall E. Soderberg,
WBAS, Muskegon
John C. Stokes,
WBAS, Alamosa, Colo.
George S. Templeman, Jr.,
NMC, Central Office
John O. Thach,
WBAS, Knoxville
Eulafoye Thomas,
RAO, Kansas City
John H. Thomas,
RFC, Fort Worth
Ralph T. Tice,
WBAS, Topeka
Union B. Webb,
WBAS, Lexington, Ky.
Theresa M. Wells,
Adm. Ops., Central Office
Meredith Wingert,
WBAS, Minneapolis
James M. Yates,
WBAS, Des Moines
William E. Zavitz,
WBAS, Lexington, Ky.

15-Year Awards

Richard A. Brinzenhofe,
Mercury, Central Office
Leon A. Brock,
WBAS, Athens, Ga.
Arles O. Brown,
NWRC, Asheville
George F. Carmickle,
WBAS, Pendleton, Ore.
Henry A. Chapman,
AWP, New York
Gerald C. Couard,
WBAS, Birmingham
Arne J. Erickson,
WBAS, Miami
Robert G. Fleming, Jr.,
WBAS, Des Moines
Daniel A. Grosso,
Adm. Ops., Central Office
Richbell A. Hastings,
NMC, Central Office
Gleason S. Henry,
Adm. Ops., Central Office
Thomas R. Jennings,
WBAS, Caribou
Ethel B. Howard,
WBAS, Miami
Myrtle A. Lamm,
NWRC, Asheville
Michael Lanosz,
Adm. Ops., Central Office
Richard E. Lettin,
WBAS, Tallahassee
Nell W. Nichols,
NWRC, Asheville
Robert C. Pritchard,
WBAS, Montgomery
Richard C. Theis,
PWP, San Francisco

John W. Mindrup

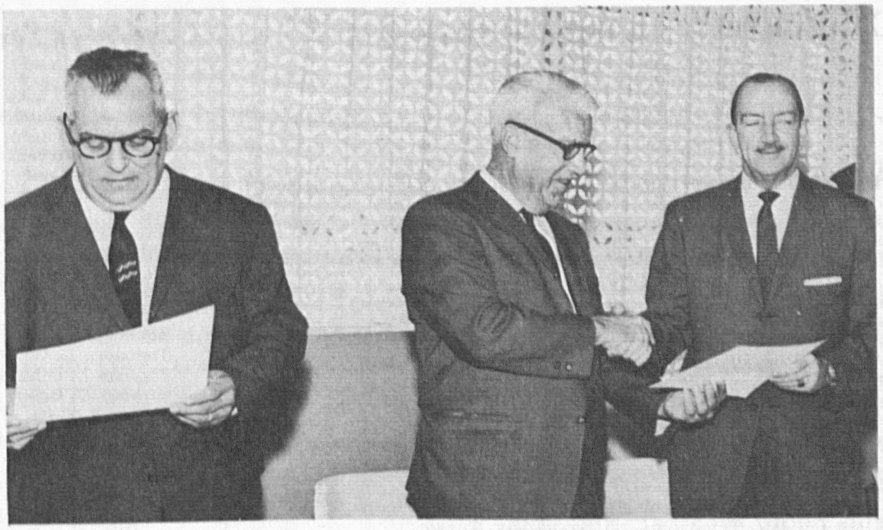
John W. Mindrup, a Meteorological Technician at the Weather Records Processing Center at Kansas City, retired April 13 after 39 years' service with the Bureau. Mr. Mindrup was 15 years old when he entered the Weather Bureau as a Messenger Boy at Terre Haute, Indiana. He served in Terre Haute until 1952, when he transferred to Kansas City. Mr. Mindrup's address is 4440 Roanoke Parkway, Apt. 205, Kansas City 11, Mo.

James F. Rink

James F. Rink, Principal Assistant at the Weather Bureau Airport Station in Little Rock, retired April 5, 1962, after 32 years of Bureau service. A native of Council Bluffs, Iowa, he attended Des Moines University, Des Moines, Iowa, and Washburn College, Topeka, Kansas. He became a Junior Observer at Topeka in 1929 and was stationed at the Central Office, Fairbanks, Alaska, Ogden, Utah, and Anchorage, before transferring to Little Rock in 1949. Mr. Rink's address is #2 Coffee Pot Lane, Little Rock, Arkansas.

Alexander L. Shands

Alexander L. Shands, Assistant Chief of the Hydrologic Services Division, retired April 27, 1962, after 32 years in Government service. A graduate of the College of the City of New York, Mr. Shands was a free lance writer before joining the Census Bureau in 1930. After two months with Census, he started his Weather Bureau career in New York City. He served at the Hadley Field Airport Station, the Newark Airport Station, and the Albany Airport Station before transferring to Washington in 1939. Mr. Shands attended the Department of Agriculture Graduate School and did graduate work at American University and George Washington University. His address is 7208 16th Avenue, Takoma Park 12, Maryland.



Ralph Higgs (center), MIC at San Juan, presents public service awards to Ramon M. Diaz (left) and Ventura Lamas, Jr., (right).

Newspaper and Radio Station Honored for Public Service

In recognition of many years of service to the Weather Bureau and to the public, radio station WKAQ, San Juan, and Ramon M. Diaz of the San Juan "El Imparcial" newspaper were given public service awards in San Juan on February 23. Ralph L. Higgs, MIC at San Juan, presented the awards to Mr. Diaz and Ventura Lamas, Jr., who represented the radio station.

The award to Mr. Diaz cited 25 years of accurate reporting of weather forecasts, bulletins, and warnings, especially during hurricane and flood situations.

WKAQ was honored for 25 years of broadcasting from the Weather Bureau office and for cooperation and assistance in broadcasting weather warnings to Puerto Rico and the Eastern Caribbean. During emergency periods, the station has remained on the air throughout the night, broadcasting storm or flood information.

Representatives of the Puerto Rico Association of Radio Broadcast and Television Stations, the Commonwealth Government, and the Puerto Rico Sugar Growers Association attended the ceremony.

John D. Letsinger Dies; Served Bureau 33 Years

John D. Letsinger, who was a Hydrologist in the Tulsa River Forecast Center at the time of his retirement in 1959, died on January 24. Mr. Letsinger entered the Weather Bureau in 1926, when he was appointed a Minor Observer at Memphis. He served at Memphis until 1942, when he transferred to Macon, Georgia. In 1944, he became head of the Tulsa Airport Station and later was Official in Charge of the Tulsa Weather Bureau Office. He moved to the Tulsa RFC in 1947.

Welcome to the Bureau

Pasquale A. Albanese, Meteorologist, New York
L. Anne Allan, Clerk-Dictating Machine Transcriber, Central Office
Charles A. Baldwin, Meteorological Technician, Marquette, Mich.
Roy R. Benning, Meteorological Technician, Great Falls
Keith J. Blessum, Meteorological Technician, Dodge City
Thomas J. Boyko, Meteorological Technician, Washington, D.C.
Fred Budig, Meteorological Technician, New York
Jerome C. Buss, Meteorological Technician, Fargo
Bethel H. Butler, Meteorologist, Minneapolis
Hugh J. Christian, Meteorologist, Point Mugu
John F. Clarke, Meteorologist, Cincinnati
George A. Cleeves, Meteorologist, Cincinnati
John D. Clithero, Meteorologist, Wake Island
William T. Cobb, Electronic Technician, Raleigh
David B. Cook, Engineering Draftsman, Salt Lake City
Clinton E. Cosseboom, Meteorologist, Chicago
Shirley M. Crowder, Meteorological Technician, Anchorage
Salvatore P. D'Ambrosio, Meteorologist, New York
Francis H. Davis, Meteorological Technician, Fort Huachuca
Lester Roy Davis, Library Assistant, Central Office
Robert T. Ehrenfeldt, Meteorological Technician, Fresno
Gerald C. Ellis, Meteorological Technician, Indianapolis
Elton J. Eske, Meteorological Technician, Tucson
Clara Louise Eyl, Clerk-Stenographer, Louisville
Sam T. Ferruzza, Position Classification Specialist, Central Office
Gladys E. Fifer, Clerk-Typist, Central Office
Kenneth D. Foltz, Meteorological Technician, Des Moines
Roger L. Geer, Meteorological Technician, Fargo
Harold E. Gerwig, Jr., Teletypist, Central Office
Kenneth R. Glodo, Meteorological Technician, North Platte
Edna Louise Grant, Clerk-Typist, Grand Rapids
Edward M. Gross, Meteorologist, Hartford
Paul R. Gullick, Jr., Meteorological Technician, New Orleans
Henry Hacia, Meteorological Technician, Central Office
John A. Hannigan, Jr., Electronic Technician, Buffalo
James E. Hansen, Meteorological Technician, Winnemucca
Marshall G. Hatch, Meteorologist, Miami
Charles D. Helms, Meteorological Technician, Fort Worth
Anita Louise Henson, Clerk-Typist, Central Office
John F. Hubenak, Meteorological Technician, Fort Worth
Pearl L. Jackson, Blueprint and Photostat Operator, Central Office
Robert A. Kanan, Meteorological Technician, Tucson
Russell E. Knutson, Meteorological Technician, Fargo
Judith Ann Lindstedt, Clerk-Typist, Central Office
John J. Lippert, Meteorological Technician, Great Falls
Wendell B. Logan, Meteorological Technician, Amarillo
Ted V. Lungwitz, Meteorological Technician, Denver
Carl M. Majeski, Meteorological Technician, Elkins, W.Va.
Gary L. Marcum, Meteorological Technician, Boise
William P. Matthes, Electronic Maintenance Technician,Dodge City
Everette M. Medeiros, Meteorological Technician, Boston
Roland O. Mittelstaedt, Meteorological Technician, Fargo
Charles J. Neumann, Meteorologist, Miami
Oliver K. Nicholas, Meteorological Technician, Huntington
John A. O'Brien, Meteorological Technician, Juneau
David W. Olkiewicz, Meteorological Technician, Sioux Falls
James N. Pauley, Jr., Meteorological Technician, New York
Anna L. Perkins, Budget Clerk, Central Office
Thomas D. Porter, Meteorological Technician, Brownsville
Robert G. Preston, Meteorological Technician, Sioux Falls
Marlin O. Pursley, Electronic Technician, New York
Bernard F. Roberts, Electronic Maintenance Technician, New Orleans
Edmund A. St. Jean, Meteorological Technician, Washington, D.C.
Marjorie A. St. Pierre, Clerk-Typist, New York
Norman R. Sandstrom, Meteorological Technician, Albany
Herman W. Schiel, Meteorological Technician, Albany
Phillip A. Sellers, Jr., Meteorological Technician, Winslow, Ariz.
Frank L. Sewall, Meteorologist, San Antonio
Robert John Sieveking, Engineer, Kansas City
Laura N. Smith, Clerk-Typist, Central Office
Stanley A. Smith, Meteorological Technician, Burlington, Vt.
Maurice A. Ward, Meteorological Technician, Winnemucca
Mary T. Watson, Meteorological Technician, Miami
Joel R. Wertman, Meteorological Technician, Jacksonville
Barbara Elizabeth Wilson, Procurement Clerk, Central Office
Dale B. Wilson, Position Classification Specialist, Central Office
Mike Yanolko, Meteorological Technician, Cincinnati
Dorothy Zecha, Clerk-Typist, Central Office
William E. Zimmerman, Meteorologist, Albuquerque

Transfers

	From	To
Charles L. Anderson	Kwajalein	Lake Charles
David F. Bakeman	Tatoosh Island	Winslow, Ariz.
Robert D. Bottom	New York	Norfolk
Adam N. Cardenas	Midland	San Antonio
Donald J. Close	Cincinnati	Hartford
Herbert C. Dahl	Indianapolis	Grand Rapids
Joel M. Donner	Jacksonville	Wake Island
Harry L. Elser	El Paso	Great Falls
William A. Evans	Winslow, Ariz.	Fresno
Maurice H. Faubion	Springfield,Mo.	Boise
Richard L. Flint	Battle Creek	Rockford, Ill.
James H. Forbes	Fort Huachuca	Yuma
Robert D. Fulton	Evansville	Red Bluff
Theodore L. Geist	Central Office	Denver
Thomas L. Gibson	Denton, Texas	Amarillo
Shreves C. Goodwin	Houston	Austin
Walter R. Goto	Wake Island	Honolulu
Carl Stanley Green	Great Falls	Boise
Carl B.S. Gullach	Kansas City	Des Moines
Wilbur K. Hall	Los Angeles	San Francisco
Robert E. Haynes	San Francisco	Point Mugu
James L. Hogan, Jr.	Washington,D.C.	Burlington, Vt.
Kenneth G. Hudgins	Nome	Lynchburg
Daniel S. Hurley	Charleston,S.C.	Burlington, Vt.
Samuel O. Iyar	Ponape	Koror
David James	Fairbanks	Burlington, Vt.
Tatsuo Kobayashi	Wake Island	Honolulu
Alexander Koscielski	Detroit	Kansas City
Jack B. Lyman	New Orleans	Jacksonville
George Henry Lynn	San Antonio	Denver
David A. MacFarlane	Fairbanks	Barrow, Alaska
Joseph V. McBride	Santa Rosa,Calif.	Minneapolis
Thomas P. McGuire	New York	Wake Island
Don E. Maw	Central Office	Greensboro, N.C.
George F. Mesesan	Central Office	Miami
Thomas Milny	New York	Johnston Island
Herman F. Mondschein	St. Louis	Kansas City
John H. Mukai	Burbank	San Francisco
Robert J. Mullin	Wallops Island	Atlantic City
John E. Newell	Wake Island	New York
James W. Rawles	Winslow, Ariz.	Klamath Falls
Robert H. Reece	Fort Huachuca	Albuquerque
Donald E. Risher	Cleveland	Elkins, W.Va.
Ben C. Robbins	Johnston Island	Eniwetok
James L. Robinson	New York	Hartford
Charles B. Samuels	Anchorage	Nome
William E. Smith	Florence, S.C.	Pittsburgh
Arthur J. Snider	Washington,D.C.	Baltimore
Marshall E. Soderberg	Muskegon	Grand Rapids
Walter L. Stirm	Battle Creek	Kearnsville,W.Va.
Akira Suzuki	Koror	Ponape
Arthur F. Talamantes,Jr.	Fort Worth	San Antonio
William W. Tanner	Silver City	Atlanta
Timmy J. Therkelsen	Cold Bay	Barter Island
James E. Toler	Columbus	Wake Island
Robert J. Urmanic	Marquette,Mich.	Point Mugu
Vincent J. Valli	Hartford	Tifton, Ga.
Raymond L. Whitney	Central Office	Cold Bay
William H. Whitson	Red Bluff, Calif.	Roseburg, Ore.
Lynn O. Wolf	Indianapolis	St. Louis
Sterling W. Yeager	Lynchburg	Elkins, W.Va.

This is the Centennial Year of Agriculture. We are happy to salute farmers, agricultural industry, and the U.S. Department of Agriculture for their many contributions to us all.

Meteorological Readings

Assignment No. LVII: This article deals with the derivation of the three-dimensional pressure field using previously determined tangential wind speeds in the Dallas tornado of April 2, 1957. "Three-Dimensional Pressure Pattern of the Dallas Tornado and Some Resultant Implications," Monthly Weather Review, Vol. 89, Number 12, December 1961.

QUESTIONNAIRE

Col. 61 Basic to the derived pressure distribution shown in figure 1 was (mark all correct statements):

1. an assumed steady state in geostrophic balance
2. movies which provided a means of estimating tangential wind velocities
3. the assumption that pressure and temperature conditions at Dallas were applicable at the 1500-foot radius
4. an assumed pressure drop of 60 mb. at the tornado axis

Col. 62 The computed vertical spacing of the pressure surfaces shown in figure 1:

1. decreases with increasing radii in the 500 to 1500-foot range
2. indicates a force equal and opposite to gravity at about 200 feet from the tornado axis
3. points to extreme upward velocities in the core
4. results in a vertical pressure difference at a radius of 1500 feet three times the value at the tornado axis

Col. 63 If it is assumed the visible tornado surface lies along an isobar as shown in figure 1, then:

1. a change in condensation pressure from 930 mb. to 940 mb. causes a pronounced lowering of all portions of the funnel
2. a computed trunk diameter of the Dallas tornado would be nearly twice that observed in photographs
3. increases in the condensation pressure at around 975 mb. results in pronounced increases in the ground diameter of the tornado
4. it is impossible to explain observed funnels

Col. 64 The existence of downdrafts inside tornado vortices:

1. for the first time is given theoretical support in this article
2. is supported by indirect evidence from tornado photographs
3. is proven by a photograph such as 5e
4. is used by the author to explain the large gradients of rainfall frequently observed in the immediate vicinity of tornadoes

Col. 65 According to this article and in reference to figure 4, which of the following statements are true:

1. It is likely that the wide tornado (d) would be more destructive than tornado (c).
2. A funnel such as (b) is indicative of descending air in the core of the tornado.
3. The plumes extending upward from the ground in (b) depict a shell where converging air turns upward.
4. All four tornado profiles depicted in figure 4 have been observed.

Col. 66 The results of the computational experience on venting are shown in figure 8, page 541. Mark the correct statements:

1. The solid curve is merely the curve T minus curve R (the residual pressure).
2. If perfect venting were possible, curve R would have coincided with curve T.
3. During the 42nd second, the pressure inside the house is greater than outside.
4. Other things being equal, the shape of curve R is influenced by the forward speed of the tornado.

Col. 67 According to figure 7, page 540, there is only 13 percent less pressure drop at a point 100 feet away from the center, whereas at 150 feet it is 50 percent of the on-path pressure drop. This is because:

1. Cyclostrophic wind adds to the dynamic effect.
2. The isobars are most tightly packed between the 100 and 150-ft. radius.
3. There must have been a steep moisture gradient in this zone.
4. Equations (2) and (3) on page 539 distort the fitted pressure field.

Col. 68 According to figure 7, page 540:

1. the wall of any frame house will resist collapsing if the tornado axis, or center, passes along a path more than 175 feet away
2. it takes a total of 6440 lbs. force along the perimeter of the wall to make it yield
3. the greatest increase in pressure on the wall occurs at the time the tornado axis is over the house
4. the force per square foot on the wall as the tornado reaches its nearest point on a path 100 feet off is about 13,000 lbs.

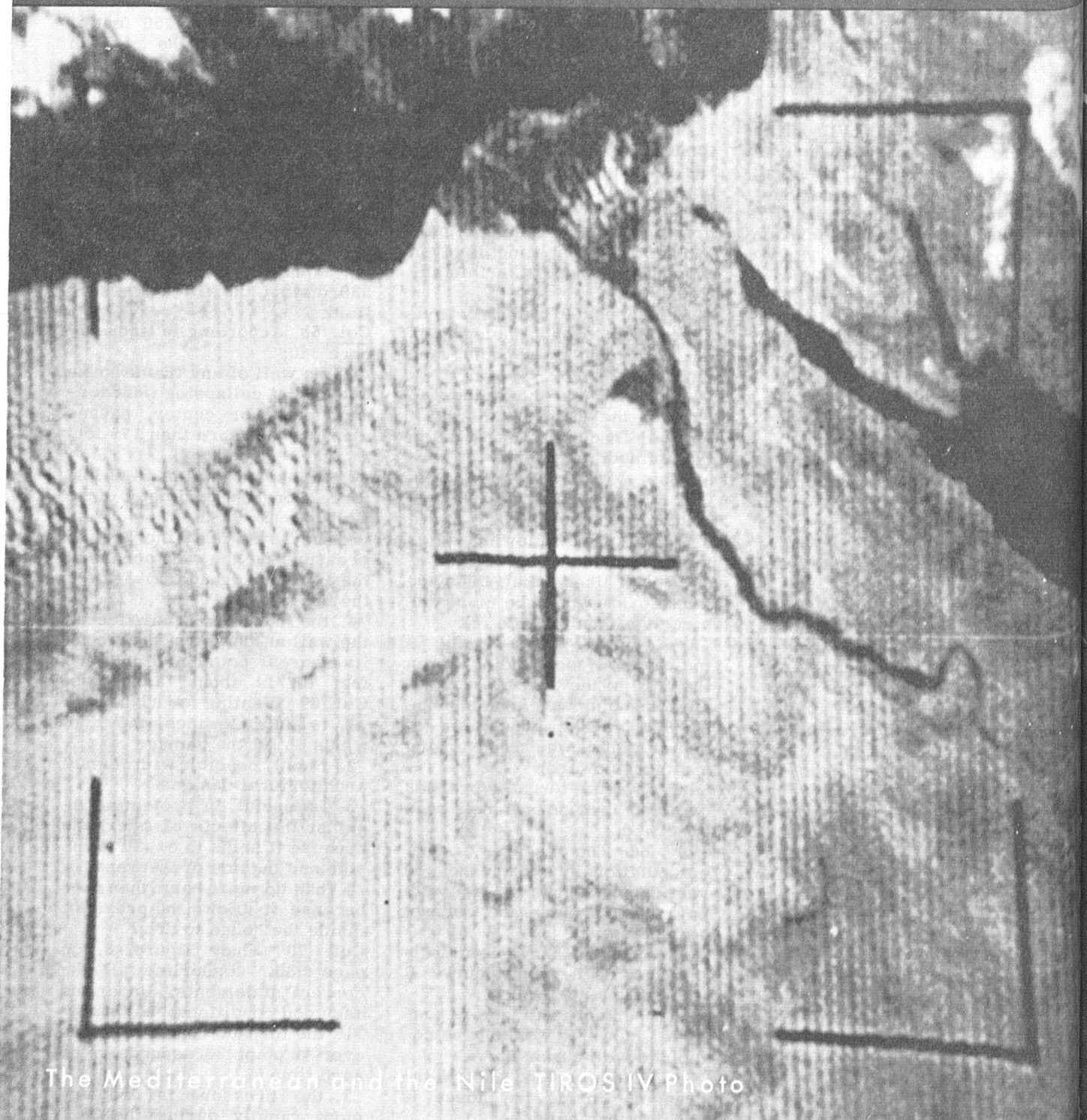
Col. 69 Venting for a building:

1. is futile, since the high winds do all the damage
2. is only possible with certain architectural designs
3. is useful in protecting against the effects of a tornado because it helps to equalize inside and outside pressures
4. can do more harm than good because it allows the pressure inside the house to drop

Col. 70 Study figure 6, on page 539. Underline all the correct statements. Under the assumed conditions:

1. the tornado center will pass over a point 33 seconds after zero time
2. the pressure is dropping most rapidly during the 33rd second
3. as the tornado approaches a given point, the pressure stops dropping at this point when the tornado is still about 120 feet away
4. only (b) above is correct

Volume 21 APRIL - MAY 1962 Number 4



The Mediterranean and the Nile TIROS IV Photo

WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU
Volume 21 JUNE 1962

TOPICS

Editorial

The WMO Report On Advancement of Atmospheric Sciences

An Exercise in Cooperation

Early in June 1962 the Executive Committee of the World Meteorological Organization, meeting in Geneva, adopted a 35-page preliminary report (plus appendices), that provides for the cooperation of Member nations in developing plans and facilities for full utilization of data from meteorological satellites. The report also proposes that Member nations extend the regular networks for surface and upper-air observations, foster the training of scientists, and support research in the atmospheric sciences, with particular emphasis on weather forecasting, storm warnings, and possible weather modification.

The report has been forwarded to the United Nations Economic and Social Council (UN-ECOSOC) and the UN Committee on Peaceful Uses of Outer Space for review and, it is hoped, endorsement. It has also been transmitted through diplomatic channels to all WMO Member nations.

The background considerations that contribute to the almost universal interest and support for this important proposal may be of interest to meteorologists in the field service.

Although the obvious goals of this ambitious program are scientific, it has other important aims that broaden support for its proposals. One of these is the extension of meteorological networks to bring to men all over the world the benefits of daily weather information and storm warnings. Other aims--such as the advancement of techniques of space exploration and increase in our knowledge of conditions in the high atmosphere and proximate outer space--have no bearing on the usual concerns of meteorology but are important for other reasons.

These aims, it may be noted, are the primary source of financial justification for costly meteorological satellites. Significant and valuable as photographs and other data provided by satellites are right now, their cost could not be justified at present wholly on the basis of their immediate value in weather forecasting. The practical uses of satellite information will doubtless multiply as research adds to our knowledge and new applications are developed.

Another purpose of the program proposed in the WMO Report is to create the opportunity for cultivating better understanding and closer cooperation among nations through the common and universal interest of all people in weather.

This grand program cannot be accomplished without the painful working out of many details. In discussions around an international conference table, one glimpses the many differences in veiwpoints, customs, official practices, and "requirements" in different lands. Since the programs visualized in the WMO Report depend on close international cooperation and large financial support shared among many nations, these national differences in views and requirements cannot be pushed aside without consideration. In fact, they are often the keys to understanding and agreement on the action to be taken.

For instance, in this country and in many others the importance of protecting human life by providing hurricane warnings is well recognized. The public and the Congress willingly spend large sums on hurricane reporting and warning services. To us, a human life has no dollar equivalent. But there are other countries--countries whose cooperation is needed in a worldwide weather watch--where the food supply and other necessities of life are so deficient that protection from dangerous storms may be regarded as less important than raising the subsistence level of those who survive them. Fortunately this viewpoint is found in very few nations, but it serves to illustrated the many national differences that must be resolved in order to achieve international cooperation. In this particular example, the obvious solution is joint funding and support by the family of nations.

In the United States, public interest in weather and climate is very large, and support for plans that "promise" to solve weather problems is almost unlimited. The proposal for advancement of atmospheric sciences, which was embodied in the UN Resolution of December 1961 and led to the WMO Report, has been received with great enthusiasm and broad vision among scientists in this field. Here again there are wide differences of opinion and decided lack of agreement on priorities for various phases of the program. The magnitude of the plan is such that neither funds nor qualified personnel are available to do everything at once. In most cases, the scientific community gives highest priority to fundamental research, while public officials and legislators are inclined to give greater support to the immediate applications--the services of weather reporting, forecasting, and warnings of destructive storms.

Within this country as well as internationally, a valuable exercise in cooperation will be required to bring the proposals to fruition.

F.W.R.

Topigrams

Washington, D.C.
June, 1962

At 8:19 a.m. EDT on June 19, TIROS V was successfully launched from Cape Canaveral by the National Aeronautics and Space Administration. The launch was timed to provide maximum weather information during the hurricane season. Although the satellite's orbit is elliptical rather than circular as planned, no picture degradation is expected at the apogee of 600 miles. This TIROS is the first to be launched into an orbit inclined 58 degrees to the equator; the earlier weather satellites had a 48-degree inclination. At 58 degrees, TIROS V can photograph weather conditions as far north as the 65th parallel. Its two cameras, identical to those in TIROS IV, are operating perfectly.

The appointment of Herbert W. Klotz as Assistant Secretary of Commerce for Administration was confirmed by the Senate on June 20. The following week, Secretary Hodges announced a series of promotions within the Department. Eugene P. Foley became Deputy to the Secretary, filling the position vacated by Mr. Klotz, and James Morton was named Special Assistant to the Secretary for Public Affairs. Henry Scharer, formerly the Deputy Director of Public Information, is now Director of the Department's Office of Public Information.

July 1 is the 25th anniversary of the USAF Air Weather Service. In 1937, 40 weather stations manned by 22 officers and 180 enlisted men were transferred from the Army Signal Corps to Army Air Corps. Today the Air Weather Service has more than 11,000 officers, airmen, and civilian employees, operating a global network of more than 400 weather stations. Its eight wings and 28 ground and reconnaissance squadrons provide round-the-clock weather support to U.S. Air Force and Army units.

With assistance from the Meteorological Statistics and Short-Range Forecasting Research offices, the Aviation Section of F&SR has completed an evaluation of certain privately produced long-range forecasts published in a popular aviation magazine. Using figures from 12 large airports around the country for the five years from March 1958 through March 1962, the actual number of IFR hours in each of five six-day periods each month was compared to the number of IFR hours forecast. The study showed that the published forecasts had essentially the same or slightly less accuracy and skill than that achieved by using climatological averages as a forecast.

Dr. Giichi Yamamoto, outstanding scientific authority on radiative properties of the atmosphere, will serve for approximately three months this summer as a consultant to the Bureau's Meteorological Satellite Activities. Dr. Yamamoto is a Professor at Tohoku University in Sendai, Japan, and was previously with the Meteorological Satellite Laboratory from March 1960 to October 1961.

Briefs from the CO Staff Conferences

It was announced that Dr. Joseph Smagorinsky, Chief of the General Circulation Research Laboratory, has been invited to deliver the Symons Memorial Lecture before the Royal Meteorological Society in England in 1963.

Dr. Reichelderfer reported that the WMO Executive Committee meetings went very well, and that our recommendations were in most cases received favorably. He added that our Presidents of Technical Commissions, Dr. Cressman and Mr. Kutschenreuter, gave excellent account of their work.

With little likelihood of the Bureau's appropriation being passed soon, Mr. Gleiter indicated that a Joint Resolution would continue appropriations for July and possibly August. This would permit the continuation of present projects, but would not allow the initiation of new programs. Since the Bureau's purchase option on the two DC-6B research aircraft must be exercised on July 1, the Bureau has requested that special provision be made to permit the Bureau to exercise the option.

Mr. Showalter expressed concern over the delay in implementing the Bureau's planned long-range radar program. Thirty-one WSR-57's will be in operation by June 1, 1963, but the converted surplus radars are becoming well-worn, and there are no funds available for new radars in fiscal year 1963.

The staff discussed the advisability of asking for radar procurement funds without definite specifications for new sets. Mr. Showalter indicated that no major changes would be needed in the electrical circuitry of the WSR-57 but that mechanical features would be modified. The Observations and Station Facilities Division will prepare and circulate a proposed planning-phasing memorandum for radar design and procurement.

Referring to the findings of Aerometric Research, Inc., Mr. Vernon said that aviation forecasters and briefers should be constantly aware of current flying weather conditions and what they are likely to become within the next six hours. To achieve this, field stations should have greater capability in processing and presenting the great mass of data they receive each hour. It has been suggested that the use of weather depiction charts for hourly distribtuion of centrally processed analyses and prognoses would enable recipients to see at a glance the current and forecast weather for any point. Mr. Vernon pointed out the limitations in the ability of the present facsimile system to transmit complex depiction charts. Color would increase the usefulness of facsimile in transmitting such charts, and Mr. Vernon has been investigating the problems of color transmission. It seems to be technically possible, but further investigation and development will be needed before this can be determined conclusively.

Mr. Davis reported that the Bureau has 255 student trainees this summer, which is approximately the number of students working toward degrees in meteorology at universities in the United States. Each trainee in the Washington area has received a letter from President Kennedy welcoming him to government service and inviting him to participate in a series of seminars.

Dr. S. Fred Singer Appointed To Direct Weather Bureau's Space Program

Dr. S. Fred Singer, one of the nation's leading space physicists, became Director of the Weather Bureau's Meteorological Satellite Activities on June 1.

Dr. Singer will direct the Bureau's space program including development of the National Operational Meteorological Satellite System, which will eventually provide continuous weather observations all over the world. He has been granted a leave of absence from the University of Maryland, where he is a professor of physics.

While with the Johns Hopkins University Applied Physics Laboratory from 1946 to 1950, Dr. Singer was engaged in early U.S. rocket flights and high-altitude research.

From 1950 to 1953, Dr. Singer was Scientific Liaison Officer for the Office of Naval Research at the U.S. Embassy in London. During this period he investigated the value of artificial earth satellites in scientific research.

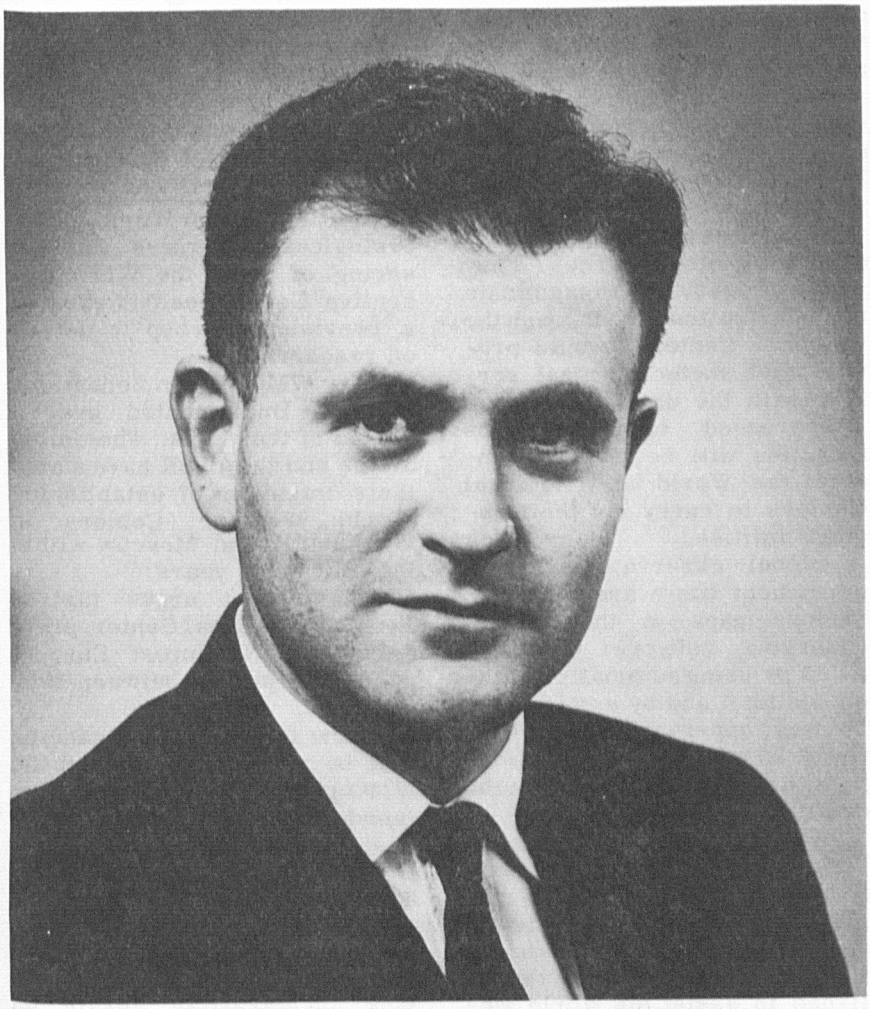
Dr. Singer became an associate professor of physics at the University of Maryland in 1953 and a full professor in 1959. Beginning in 1954, he published a number of papers on the design and use of artificial earth satellites, including their application to meteorology.

He graduated in electrical engineering from Ohio State University and received his A.M. and Ph. D. degrees in physics from Princeton University.

In 1958, Dr. Singer received a special commendation from President Eisenhower for outstanding achievement in the development of satellites for scientific purposes and was chosen by the U. S. Junior Chamber of Commerce as one of the Ten Outstanding Young Men of the Year in 1959.

Dr. Singer is Editor-in-Chief of Progress in the Astronautical Sciences, a Fellow of the American Physical Society, and a member of a number of scientific organizations, including the American Geophysical Union and the American Astronautical Society.

David S. Johnson, who has been among the leaders in developing operational meteorological satellites , will serve as Deputy Director.



Dr. S. Fred Singer

WMO Proposes World Weather Watch; Washington To Be a Major Center

A "World Weather Watch," the new name proposed for the global network of weather observations expanded to include meteorological satellites and a system of world and regional weather centers, has been proposed by the World Meteorological Organization in its report to the United Nations.

Released on June 8, 1962, the WMO report presents a program for achieving the goals of U. N. Resolution Number 1721 on Peaceful Uses of Outer Space.

The report was prepared under the direction of Mr. D. A. Davies, Secretary-General of the WMO, in consultation with Dr. Harry Wexler, the Weather Bureau's Director of Meteorological Research, and by Professor V. A. Bugaev, Assistant Director of the Hydrometeorological Service of the USSR, with expert staff assistance by Dr. M. A. Alaka, of the Weather Bureau's National Hurricane Research Project in Miami.

After such United Nations agencies as UNESCO and the International Telecommunication Union and non-governmental bodies such as the International Council of Scientific Unions and the International Union of Geodesy and Geophysics had been consulted, the report was reviewed by the WMO Executive Committee at its recent meeting in Geneva, Switzerland. The Executive Committee, in accepting the report with slight changes, expressed appreciation for the contribution of United States and Russian scientists in preparing the report.

The plan will be presented to the July meeting of the U. N. Economic and Social Council and will be submitted to the U. N. General Assembly in September.

The report describes how satellite observations, combined with surface and upper-air observations, should permit detection and tracking of every major storm. It emphasizes that satellite observations will not replace conventional weather observations but will supplement them.

The following specific steps must be taken if satellite observations are to have the maximum impact on weather forecasting and research:

An international plan for meteorological satellites must be developed, including coordination of orbits and of the types and scope of observations.

A "World Weather Watch," with World and Regional Weather Centers, should be established. The World Centers would have access to global weather observations from satellites and other sources. They would process and disseminate the information and, through the Regional Centers, would provide each meteorological service with the data it requires.

Increased communications facilities will be needed to enable the World and Regional Centers to carry out their responsibilities.

Global observations on a permanent basis are required. Serious gaps in the present observing network would be filled by using automatic weather stations and by establishing 53 new upper-air stations, of which 20 should be ship stations in both the Northern and Southern Hemispheres.

An advisory committee on research, made up of scientists from the WMO, UNESCO, the International Council of Scientific Unions, and other international bodies, would be established to assist the World Meteorological Organization in stimulating research activities. Pending the inauguration of this committee by the World Meteorological Congress in the spring of 1963, the WMO Executive Committee has created a provisional group to advise on research.

The WMO recommendations will be implemented over a period of ten years. The United States and the USSR have stated their intention of establishing World Weather Centers in Washington and Moscow within the next three years.

The report urges that at least one Regional Center, preferably in Northwest Europe, should be set up between 1963 and 1965.

Some international financing will be needed to carry out the WMO plan. The report recommends that the possibility of assistance from the United Nations Expanded Program of Technical Assistance and the United Nations Special Fund for Economic Development should be explored. It suggests further that consideration should be given to the establishment of a U. N. World Weather Fund to carry out the WMO plan.

NWRC Director Co-Authors Bibliography

Dr. Gerald L. Barger, Director of the National Weather Records Center, has co-authored a comprehensive bibliography of publications in agricultural meteorology.

Compiled in cooperation with Jen Yu Wang, Assistant Professor of Meteorology and Soils at the University of Wisconsin, the Bibliography of Agricultural Meteorology contains more than 11,000 references to works on physical factors affecting plant growth and development, microclimate, observations and instrumentation, influences on animals, phenology and environmental control, and agrometeorology.

In addition to the principal reference list, the book provides complete author and subject indexes and a user's guide and list of abbreviations.

Warning Service and Research Project Prepared for Season's First Hurricane

As the 1962 hurricane season begins, ships, planes, radar, and a weather satellite are ready to report the formation of Alma.

Alma is the name assigned to the first tropical cyclone to occur this year in the Atlantic, the Caribbean, or the Gulf of Mexico. On the list of names for 1962, Alma is followed by Becky, Celia, Daisy, Ella, Flossy, Greta, Hallie, Inez, Judith, Kendra, Lois, Marsha, Noreen, Orpha, Patty, Rena, Sherry, Thora, Vicky, and Wilna.

In 1961, TIROS III demonstrated the value of weather satellites in hurricane-spotting by discovering Hurricane Esther as it was forming in the Atlantic. Altogether, five hurricanes and one tropical storm in the Atlantic were seen by TIROS III. In the eastern Pacific, two hurricanes and a tropical storm were photographed and nine typhoons in the central and western Pacific were followed by the satellite.

During the coming hurricane season, satellite cloud photographs will be transmitted by photofacsimile to the warning centers in San Juan, New Orleans, and Miami, where they will be used in tracking and forecasting tropical storms.

The marine automatic observing station, developed by the National Bureau of Standards for the Navy, will again be anchored in the Gulf of Mexico at 25° North, 90° West. New additions to the station's instrumentation include a wave height indicator and a device to measure humidity inside the station, so that water leakage can be detected.

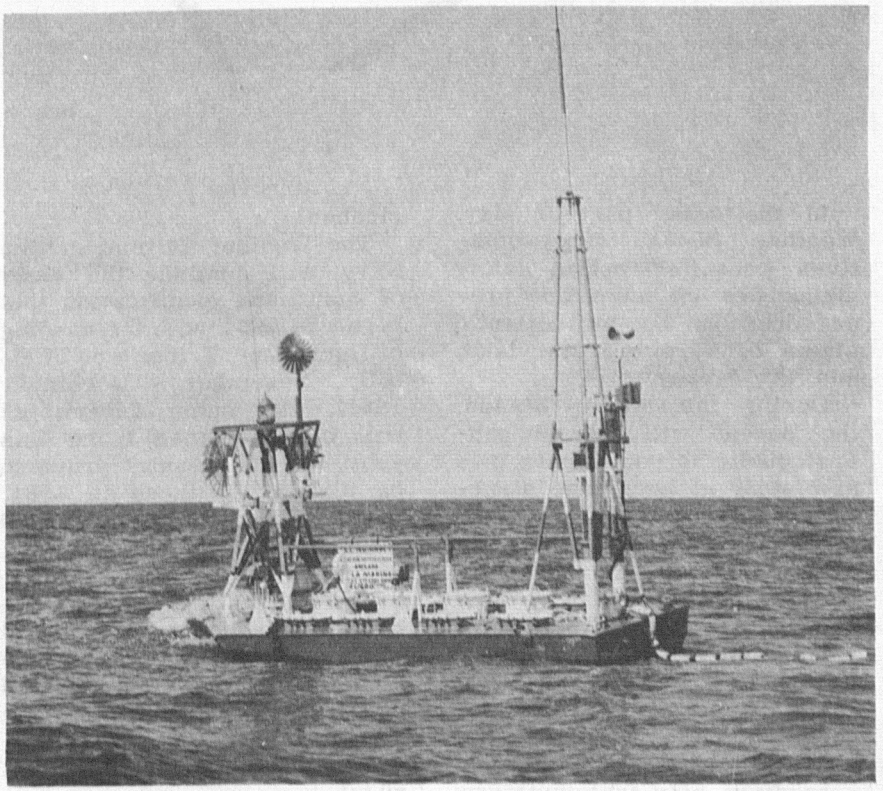
The Navy hurricane hunters of Airborne Early Warning Squadron 4, based in Jacksonville, Florida, and Roosevelt Roads, Puerto Rico, will patrol the Atlantic, the Caribbean, and the Gulf of Mexico. Air Force weather reconnaissance planes will continue to operate from Kindley Air Force Base in Bermuda. Operations of the Weather Bureau's Research Flight Facility will be closely coordinated with those of the military planes. The Federal Aviation Agency will provide communications for hurricane reports and air traffic control services for the reconnaissance aircraft.

The Bureau's radar fence from Maine to Texas was completed last year and proved its effectiveness, especially in the accurate tracking of Hurricane Carla. Navy, Air Weather Service, Air Defense Command, and Atlantic Missile Range radar sets will also be used to track the movement of hurricanes near the coast.

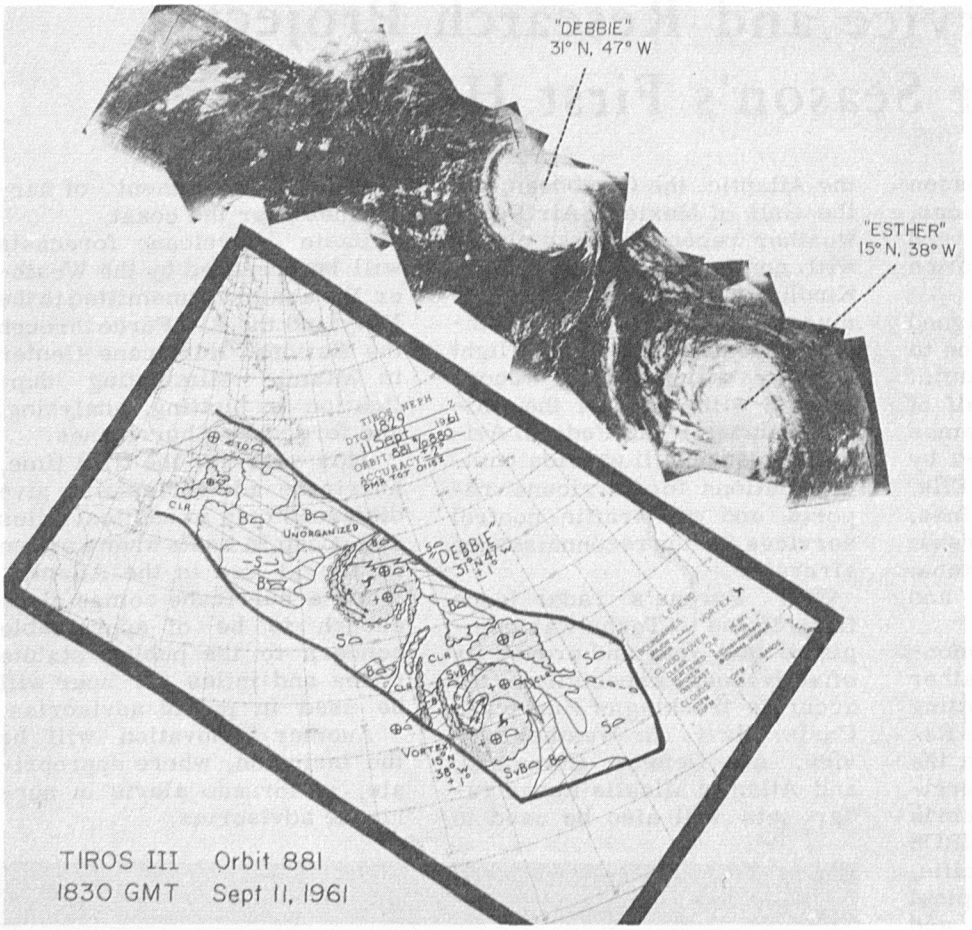
Basic hurricane forecasts will be prepared by the Weather Bureau and transmitted to the Navy and the Air Force through the National Hurricane Center in Miami, eliminating duplication in plotting, analyzing, and forecasting hurricanes.

This year for the first time, hurricane advisories will give distances only in nautical miles and speed in knots when a storm is far at sea in the Atlantic. When a hurricane comes close enough to be of appreciable concern to the public, statute miles and miles per hour will be used in public advisories.

Another innovation will be the inclusion, where appropriate, of tornado alerts in hurricane advisories.



The marine weather station, anchored in the Gulf of Mexico, transmitted the first reports of Hurricane Ethel in 1960.



On its 881st orbit, September 11, 1961, TIROS III photographed hurricanes Debbie and Esther moving northeastward across the Atlantic. At left are a mosaic and nephanalysis of the photographs.

In the latter part of May, Weather Bureau representatives consulted public safety authorities on hurricane preparedness in the mid-Atlantic states of Virginia, Maryland, and New Jersey.

During the coming season, the Bureau will ask the general public to participate in a new study of hurricane structure. When a hurricane approaches, public broadcasts will request residents to record the sounds made by the violent winds around the eye. In past hurricanes, it has been noted that the greatest damage in wooded areas often occurs in streaks, suggesting the possibility of tornado-like circulations. Sound recordings may contribute new knowledge of the pattern of airflow near the center of hurricanes.

The Weather Bureau and the Navy will continue the study of hurricane modification that began in 1961 with the seeding of Hurricane Esther (see TOPICS, November - December 1961). The same experiment will be performed twice this year. If the results prove to be similar to those in 1961, then a hurricane will be seeded a number of times in one day, which should have an even greater effect on the storm. The hurricane-seeding experiments will be sponsored jointly by the Weather Bureau, the National Science Foundation, and the Navy.

The Bureau's four aircraft, which have been gathering data from severe storms in Oklahoma, will be ready to participate in hurricane research by mid-August. One of their major objectives this season will be to obtain information on hurricanes' spiral rainbands and the means by which they contribute to the energy of the storm.

Data collected by the instruments aboard the aircraft will processed by a new high-speed computer recently installed at the National Hurricane Research Project's headquarters in Miami.

The NHRP research programs are now emphasizing theoretical research, applying the data collected by the aircraft to numerical analysis and prediction. As in previous years, the NHRP has the cooperation of a number of universities.

WBRS, FORT HUACHUCA

While most of southern Arizona swelters in mid-summer heat, the Weather Bureau staff at the U. S. Army's Electronic Proving Ground in Fort Huachuca enjoys comparatively cool weather.

The Bureau's Research Station there was established to provide meteorological support for the testing of a jet-powered surveillance drone and to evaluate atmospheric effects on radio propagation in the Army's tests of interference.

The staff of three meteorologists, ten meteorological technicians, and three electronic technicians, under the direction of Wayne S. Johnson, is primarily concerned with providing the highly accurate data required for the launching and recovery of the drone.

For drone testing they begin issuing planning forecasts five days prior to flight day. Operational forecasts are started two days prior with the final forecast submitted during the countdown at seven minutes before the launch. The forecasts provide detailed information on wind, temperature, humidity, pressure, pressure altitude, visibility, turbulence, and cloud conditions from the surface to a high altitude over the launch, flight, surveillance, and recovery areas.

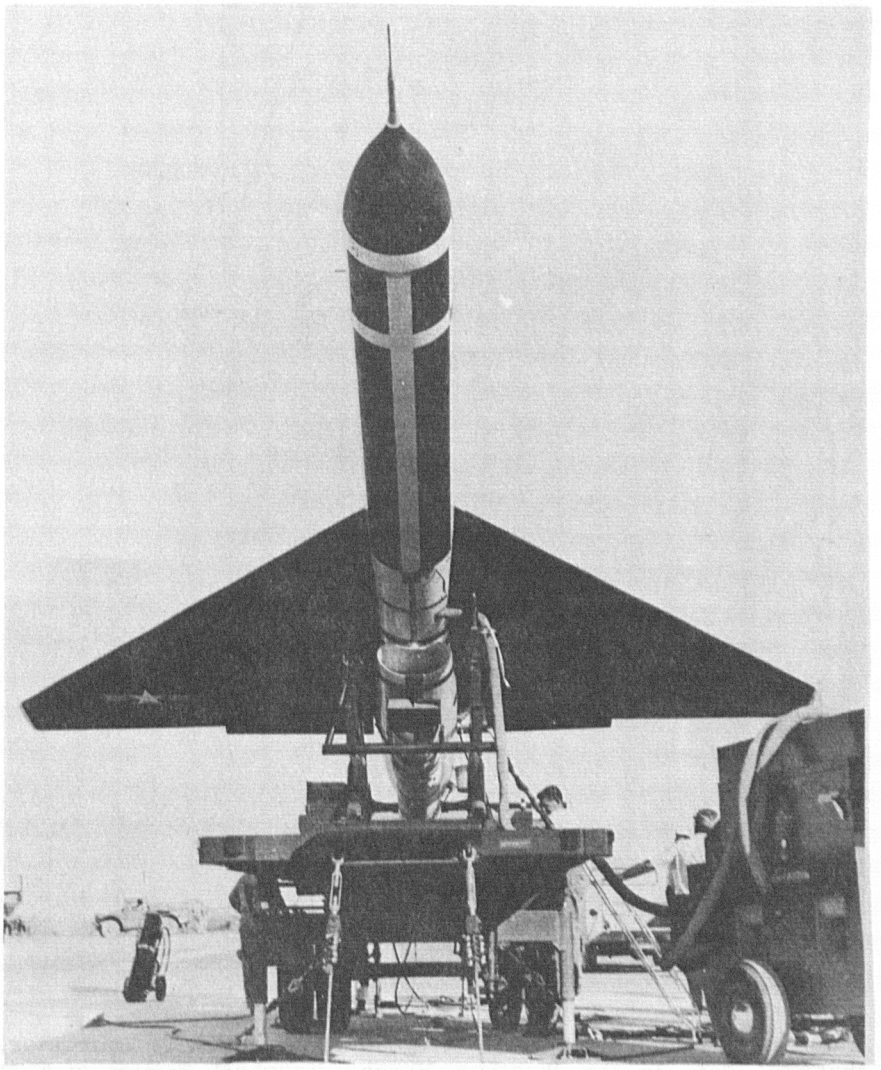
During the drone tests, the meteorological technicians take surface and upper-air observations at Yuma (Test Station), Dateland, Gila Bend, and a surveillance area employing rawinsonde, wiresonde, and double theodolite methods. One meteorologist prepares a meteorological data report after each test for the evaluation of drone and sensor performance.

While the drone is being recovered by parachute, the Bureau staff takes a detailed double-theodolite winds-aloft observation to about 5000 feet. The findings are used to determine how the drone and its parachute respond to winds and to help develop operational methods for predicting the drone's impact point. The drone is designed as a modern reconnaissance vehicle for combat troops.

For the Army's radio propagation studies, the research group measures vertical profiles of the refractive index in conjunction with radio transmission over various paths and frequencies. After a year or more of these observations have been accumulated, a scheme of forecasting the effect of terrain and atmosphere on signal strength will be evaluated.

In addition to the drone testing observation stations, the Fort Huachuca area is dotted with 30 recording stations approximately 1-1/2 miles apart, which measure pressure, humidity, temperature, rainfall, and wind. Fourteen automatic weather stations covering the southern third of Arizona read out on a teletypewriter in the Fort Huachuca office upon command from the central master panel.

With these facilities, the



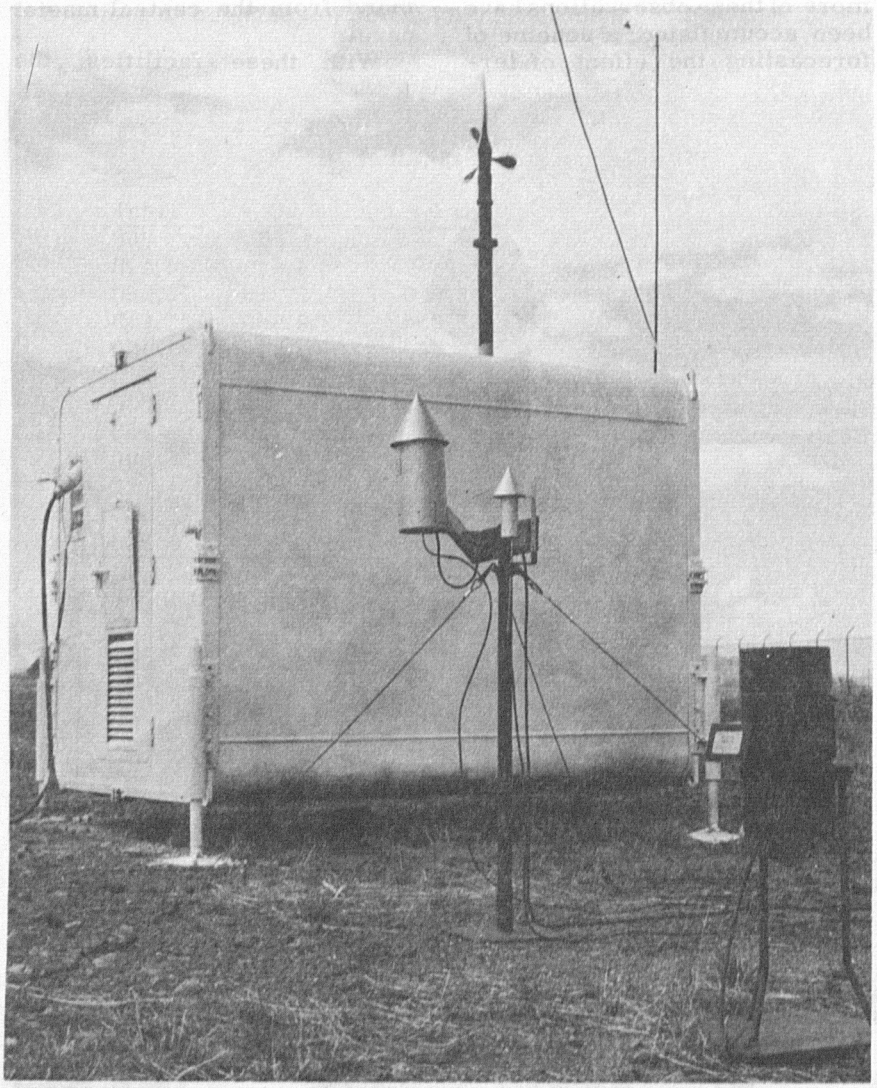
A jet-powered SD-5 surveillance drone is prepared for launch at Yuma Test Station. U.S. Army photograph

group is able to do intensive studies of forecast techniques, especially for low-level winds, and of the effect of terrain on the weather.

The Fort itself is located on a plateau at an elevation of over 4600 feet. It is just 15 miles from the U. S.-Mexican border and about 80 miles southeast of Tucson. Originally established in 1877 to protect settlers from Apache and Mexican raiders, Fort Huachuca was reopened in 1954 as the Army's Electronic Proving Grounds. Since then, Sierra Vista, a city of 5000, has sprung up next to the Fort and is one of the fastest growing communities in Arizona.

Due to the elevation and frequent afternoon thunderstorms, the summers are fairly cool. Average temperature for July, the hottest month, is 79.

Recreational facilities in the area include golf, horseback riding, camping, hunting, and fishing. The University of Arizona extension at Fort Huachuca offers courses at both the undergraduate and graduate levels.



Automatic weather stations, designed to be lifted by helicopter, transmit data to the Weather Bureau Research Station at Fort Huachuca. Temperature and humidity elements are mounted on the post in the foreground. U.S. Army photograph

Secretary Hodges Cites Number of Scientists Employed by Commerce

In his recent testimony before the House Committee on Post Office and Civil Service, Secretary of Commerce Luther H. Hodges presented some interesting statistics on the Department's scientific programs.

"In the area of science and technology alone," the Secretary said, "the Department has research and development programs for which more than $100 million is budgeted in fiscal 1963, exclusive of facilities. The Department has seven bureaus which are engaged in scientific activities: the National Bureau of Standards, the Weather Bureau, the Coast and Geodetic Survey, the Patent Office, the Bureau of Public Roads, the Maritime Administration, and the Area Redevelopment Administration.

"Over half the personnel of the Department are professional employees, technicians, and support personnel.

"Commerce is the largest employer of physical scientists in the entire Federal Government. Commerce ranks high among all agencies of the Government in the employment of virtually all types of scientists and engineers."

Lightning Strikes Forecaster's Home

Earnest A. Rodney, Meteorologist in Charge at the Weather Bureau Office in Asheville, had predicted thunderstorms for May 27. He knows his business -his home was struck by lightning at 7 p.m. that evening.

The house was splintered at one corner, ceilings in both living room and kitchen were cracked, a window in the basement was knocked out, and a concrete sidewalk was cracked.

Bureau of the Budget Surveys Government Weather Program

At the request of the House Committee on Appropriations, the Bureau of the Budget has prepared a Survey of Federal Meteorological Activities, summarizing the major meteorological programs conducted by Federal agencies.

The report will assist congressional committees and the Bureau of the Budget in reviewing the meteorological programs of the various agencies.

The Budget Bureau found 15 agencies engaged in significant meteorological activities. The Weather Bureau provides basic weather services for the others, but cannot perform all meteorological activities for all agencies.

The survey noted that, except for the concept of a central service agency embodied in the statutes concerning the Weather Bureau, present organizational arrangements represent working adjustments made to meet changing needs.

The survey found that scientists, through research and development, are gaining new tools to add to their understanding of the cosmic nature of meteorology. These advances introduce new requirements for meteorological support. The expansion of meteorology makes it necessary to prevent wasteful proliferation of Federal programs and to assure that such programs are soundly conceived and effectively coordinated.

The following tables are abstracted from survey findings as to expenditures and personnel use by the agencies engaged in meteorological activities:

TOTAL ESTIMATED EXPENDITURES-FY 1962
(Thousands of dollars)

Agency	Operations	R&D	Total
Agriculture		960	960
Atomic Energy Commission		4,440	4,440
Commerce	105,850	9,210	115,060
Department of Defense	87,690	19,980	107,670
Federal Aviation Agency	17,460	3,940	21,400
Health, Education and Welfare		4,080	4,080
Interior		700	700
NASA		50,800	50,800
National Science Foundation		5,450	5,450
Treasury (Coast Guard)	290		290
Total	211,290	99,560	310,850

PERSONNEL BY FULL TIME EQUIVALENT - FY 1962
(No. of man years)

Agency	Forecasting and Briefing	Measurements	Communications	Climatology	Total
Weather Bureau	1,690	2,170	85	320	4,265
Navy	920	910	1,040	10	2,880
Air Force	4,140	4,680	2,045	380	11,245
Army		120			120
Federal Aviation Agency	30	130	1,650		1,810
Coast Guard	20	15	15		50
Total	6,800	8,025	4,835	710	20,370

Welcome to the Bureau

Rose Mary Agar, Accounting and Fiscal Clerk, Central Office
George R. Alward, Jr., Electronic Technician, Toledo
John D. Armstrong, Jr., Meteorological Technician, Anchorage
Thomas C. Aston, Meteorological Technician, Central Office
Fitchue Barker, Jr., Teletypist, Central Office
Edna M. Barnes, Clerk-Typist, New York
Horace L. Baugh, Meteorological Technician, Dodge City
Rodney J. Becker, Meteorologist, Cleveland
Willis H. Berry, Meteorological Technician, Kansas City
Janet P. Blair, Clerk-Stenographer, Central Office
Lawrence G. Blanchard, Meteorological Technician, Silver City
Alice C. Bloomquist, Clerk-Stenographer, New York
James N. Booms, Electronic Maintenance Technician, Detroit
Wendell H. Brackett, Meteorological Technician, Central Office
Carl Dean Bramble, Meteorological Technician, Central Office
Sonja L. Brown, Secretary (Stenography), Central Office
Stanley E. Buss, Meteorologist, Sioux Falls, D. C.
Damon B. Capps, Jr., Electronic Maintenance Technician, Salem
Donald B. Capps, EAM Operator, Asheville
Charles E. Carlson, Budget Analyst, Central Office
George M. Carter, Meteorological Technician, Montgomery, Ala.
Ruth B. Chapman, Library Assistant, Central Office
Grace S. Chinaka, Accounting and Fiscal Clerk, Honolulu
John R. Clements, Jr., Meteorological Technician, Anchorage
Lillian D. Cochrane, Secretary (Stenography), Central Office
Linda B. Cook, Clerk-Stenographer, Central Office
William H. Cope, III, Meteorological Technician, Las Vegas
David R. Coulter, Meteorologist, Central Office
Eugene J. Cronin, Meteorological Technician, Columbus, Ohio
Gloria V. Davis, Clerk-Dictating Machine Operator, Central Office
Johnnie S. Davis, Accounting and Fiscal Clerk, Fort Worth
William L. Denis, Jr., Storekeeper Clerk, Honolulu
Rosemary Depalma, Accounting and Fiscal Clerk, Central Office
Walter A. DeVoe, Meteorological Technician, Des Moines
Altha J. Deweese, Meteorological Technician, Fort Huachuca
Brian J. Donnelly, Information Specialist, Central Office
Donna Jean Dorchak, Secretary (Stenography), Central Office
Robert Duke, Meteorological Technician, Las Vegas
Louise A. Durall, Weather Data Editor, New York
Willma E. Eckstorm, Clerk-Stenographer, Central Office
Joseph J. Filton, Meteorological Technician, Charleston, W. Va.
Carl L. Frey, Financial Management Specialist, Central Office
Margaret L. Fulton, Meteorological Technician, San Francisco
Eugene F. Gebler, Meteorological Technician, Midland, Tex.
Kenneth D. Goodson, Meteorological Technician, Memphis
Elwood C. Gray, Meteorological Technician, Elkins, W.Va.
Lovett B. Neal, Clerk-Stenographer, East Lansing
Ray N. Newcomb, Meteorological Technician, Central Office
James R. Owenby, Jr., Statistical Draftsman, Asheville
Herman P. Perrotti, Meteorological Technician, Boston
Harold A. Preston, Meteorological Technician, Canton Island
Eunice A. Price, Accounting and Fiscal Clerk, Central Office
Frank T. Quinlan, Meteorologist, Asheville
Earl L. Rampey, Meteorological Technician, Florence, S. C.
Jack W. Revis, Warehouseman, Asheville
Richard J. Robson, Meteorological Technician, Fort Huachuca
Ben H. Russler, General Engineer, New York
Nancy I. Saiki, Secretary (Stenography), Honolulu
Shirley Jean Sands, Telephone Operator-Information Clerk, Central Office
Dennis G. Schmidt, Meteorological Technician, Evansville
Bernard L. Shrider, Meteorological Technician, Omaha
Alex A. Shoemake, Meteorological Technician, Las Vegas
Laura M. Smothers, Clerk-Stenographer, Corvallis, Ore.
John D. Staling, Electronic Technician, Central Office
Littleton R. Stewart, Electronic Technician, Cincinnati
Myril T. Stewart, Mail and File Clerk, Kansas City
Thomas G. Swift, Meteorological Technician, Tucson
Dorothea M. Tolson, Blueprint and Photostat Operator, Central Office
John P. Trent, Electronic Technician, Anchorage
Russell D. Trowbridge, Meteorological Technician, Tatoosh Island
Charles M. Turner, Warehouseman, Asheville
Doyle D. Wade, Meteorological Technician, Boise
Robert I. Walker, Meteorological Technician, Ely, Nev.
Ethelyne Wilkes, Mathematician, Central Office
Norman J. Wilson, Meteorological Technician, Fort Huachuca
Mary Frances Wyvill, Secretary (Stenography), Central Office
Alvin L. Yarborough, Jr., EAM Operator, Asheville

Transfers

	FROM	TO
Victor L. Alcala	Boston	New York
Dorus D. Alderman	Key West	Amarillo
John P. Armrust	Peoria	Bethel, Alaska
Norman S. Benes	Antarctica	Sacramento
Robert M. Black	Des Moines	Portland, Ore.
Bruce H. Blankenship	Asheville	Anchorage
Vesper Boynton	Boston	Wallops Island
Robert E. Bradford	Asheville	Central Office
Robert R. Brown	Akron	Sheridan, Wyo.
Donald A. Brush	Miami	Savannah
Oscar E. Burnett	Ft. Worth	Topeka
Robert E. Cardinal	Duluth	Klamath Falls, Ore.
Ronald L. Chudowsky	Roanoke	Hartford
Charles T. Cochrane	Canton Island	Anchorage
Demeter J. Coparanis	Central Office	Portland, Ore.
James D. Cornett	Battle Creek	Detroit
William H. Counts	Chattanooga	Knoxville
Joseph A. Cronin	Sault Ste. Marie	Wake Island
Frank E. Dahlmann	Central Office	Wallops Island
Jack E. Davis	Oakland	Burbank
Fidel A. Diorio	Albany	Hartford, Conn.
Leslie E. Ensign	Salt Lake City	Seattle
Lynn L. Estep	Dodge City	Anchorage
Owen G. Evans	Pittsburgh	Boston
James A. Fellgren	Bangkok, Thailand	Central Office
George W. Geisler	San Juan	Honolulu
Earl H. Gillette, Jr.	Boston	New York
Thomas I. Gray, Jr.	Melbourne, Australia	Central Office
William V. Greco	Huntington, W. Va.	Erie, Pa..
Iris L. Grenninger	St. Louis	Springfield, Mo.
Robert L. Gustafson	Denver	Minneapolis
Ben W. Harlin	Antarctica	Fort Huachuca
Roger A. Hegstrum	Springfield, Mo.	Fresno
William E. Higgins	Wallops Island	Atlantic City
Ralph R. Hocker	Montgomery	Huntsville
Bernard Hohenberger	McGrath, Alaska	St. Paul Is.,Alaska
David A. MacFarlane	Barrow	Nome
James J. McCoy	Denver	Boise
Ronald J. McCue,Jr.	Bethel, Alaska	Albany, N. Y.
Robert E. McGlon	Annette, Alaska	Los Angeles
Jake E. Mc Knight	Memphis	Las Vegas
Roy F. Miller	Denver	San Juan
Donald H. Moran	Honolulu	San Francisco
Robert Lee Morris	San Francisco	Denver
Donnie Joe Musgrove	Cordova	Bethel, Alaska
Teruo Nagami	Honolulu	Wake Island
George B. Overgard	Moline	Denver
Joseph D. Paranzino	New York	Wallops Island
Doyel W. Perry	Central Office	Kansas City
Richard A. Proulx	Norfolk	Boston
George A. Quereau	Houston	New Orleans
Paul D. Rank	Great Falls	Las Vegas
William M. Reed	Hartford	Cleveland
Albert Romero	Cold Bay, Alaska	Honolulu
Robert J. Schmidli	Denver	Phoenix
Leighton Schneider	Casper, Wyo.	Sioux Falls, S. Dak.
Irvine F. Schnittgrund	Waterloo, Ia.	La Crosse, Wis.
William P. Schultz	Battle Creek	Indianapolis
Donald A. Semancik	Indianapolis	Milwaukee
Ronald P. Stagno	Brownsville	Barrow
Edward L. Stensland	Pt. Arguello, Calif.	San Nicolas Island
Lee L. Stinson	Denver	Concordia, Kan.
Milton G. Stirdivant	Madison, Wis.	Green Bay
Michael Sunray	San Juan	Mexico City
Ronald K. Surface	Salt Lake City	Seattle
Bryce O. Tilton	Seattle	Mould Bay, Canada
Clifton F. Tisdale	Central Office	Boston
James W. Trout	Central Office	Miami
Aubrey F. Tyson	Charlotte	Elkins, W. Va.
Richard J. Wagner	Kwajalein	San Francisco
Thomas J. Waldrop	Asheville	Charleston, S.C.
Clarence A. Wardman	Battle Creek	Evansville
Raymond L. Whitney	Central Office	Cold Bay, Alaska
Richard C. Wiggers	San Francisco	Central Office
Ben H. Williams	Cape Hatteras	Charleston, W. Va.
George E. Williams	Huntsville, Ala.	Central Office
Donald L. Willson	Las Vegas	New York
Arthur A. Zimmerman	Pueblo	Denver

Charles W. Carlier

Charles W. Carlier, a Meteorological Technician at the National Weather Records Center in Asheville, North Carolina, retired May 24 after serving the government for 16 years. Mr. Carlier began his meteorological training in the U.S. Navy during World War II. He joined the Bureau at Chicago in 1946, later served at Washington, D.C., Wilmington, Ohio, Norfolk, and New Orleans before being assigned to Asheville. His address is 150 Kenilworth Road, Asheville, North Carolina.

Verne D. Steves

Verne D. Steves, Climatological Operations Supervisor at the Weather Records Processing Center at Chattanooga, retired June 6 after 33 years with the Weather Bureau. Following his first assignment at Broken Arrow, Oklahoma, Mr. Steves served the Bureau at Omaha, Kansas City, San Francisco, and Atlanta. He transferred to Chattanooga in 1947. Mr. Steves attended the Colorado School of Mines and the University of Georgia. His address is 501 Shawnee Trail, Chattanooga 11, Tennessee.

Harry E. Houts

Harry E. Houts, a Voucher Examiner in the Central Office Administrative Operations Division, retired May 25, after 26 years of government service. A World War I veteran, Mr. Houts worked for the Senate, the U.S. Post Office, the Bureau of Standards, and the Department of Commerce before joining the Weather Bureau in 1944. He served at the Central Office throughout his Bureau career. Mr. Houts' address is 1501 Delafield Place, N.W., Washington 11, D.C.

1919 OIC Offers Solution To Communication Problem

Back in 1919, dissemination of weather data was even more of a problem than it is today. Eric R. Miller, Official in Charge of the Weather Bureau Office in Madison, Wisconsin, saw a solution to the problem and let the Chief of the Weather Bureau know about it. He wrote:

Sir:-

I have the honor to bring to your attention the great importance of the wireless telephone as a solution of the Bureau's problem of distributing weather information to the farmer.

I am informed that any Bell telephone can be very cheaply converted into a receiving station for wireless telephone messages. The wireless station at the University of Wisconsin has already been converted to a sending station for wireless telephony, and has talked plainly to Chicago. Similar installations will doubtless be available in every state.

Would it not be most advantageous to take this problem up with the engineers of the American Telephone and Telegraph Company, with the object of inducing the commercial companies to provide for the broadcast distribution of weather information by wireless telephone?

Chief C.F. Marvin replied:

Sir:-

Your letter of 31st ultimo relative to the possibilities attaching to the use of wireless telephone for the purpose of distributing weather information to the farmer is acknowledged.

A preliminary investigation as to the possibilities of this method of broadcasting weather forecasts has been made. While it is possible to communicate in the manner described, it is not as yet practicable and the outlook for its use in Weather Bureau work, except possibly in the distant future, is not encouraging. However, the subject will be kept in mind and you will be advised should developments warrant.

Edgar A. Moore

Edgar A. Moore, Meteorologist in Charge of the Weather Bureau Airport Station at Wichita Falls, Texas, retired June 8, after serving the Weather Bureau nearly 32 years. He joined the Bureau as a Junior Observer at Broken Arrow, Oklahoma, in 1930 and served at Del Rio, Big Spring, and Abilene, Texas, and at Albuquerque, New Mexico, before transferring to Wichita Falls. Mr. Moore studied at the University of Missouri, George Washington University, and Hardin Simmons University. His address is R.F.D. 1, Box 73, Wichita Falls, Texas.

Kathryn F. Morgan

Mrs. Kathryn F. Morgan, a Secretary at the Regional Administrative Office in Anchorage, retired June 10. Mrs. Morgan attended the University of Montana and received a B.A. from the University of Washington at Seattle. A former newspaper reporter, she worked for many government agencies before joining the Weather Bureau in 1957 at Anchorage. Her address is P.O. Box 893, Anchorage, Alaska.

Topeka MIC Recommends Error Detection Program

By memorandum dated September 20, 1961, the O&SF Division called the attention of all rawin and pibal stations to the fact that in recent months a number of instances had been noted in which wind directions were evaluated approximately 180° in error. Such errors have been committed here, but as we recall they have been detected and corrected prior to transmission. Errors of doubling or halving of wind speed, and other errors both in upper-air and surface observations, have gone out undetected.

It would seem that active participation of using offices--forecast centers and others--will be needed to clean up this recurrent observational error problem. SELS does not hesitate to query this or other offices in regard to questionable observations. Requests for verification or correction from other forecast offices are so rare that one cannot help but speculate that most modern forecasters accept errors of omission and commission as a matter of course and not of enough importance to bother requesting a verification.

Such queries from forecasters would impress upon observing personnel that the product of their work is important to, and is being relied upon in, the going forecasting and weather information programs of the Bureau. A listing of errors by RAVU or WRPC, long after the event and after the attendant circumstances have become blurred by the passage of time, does not carry nearly the impact that a query from a forecaster would have when received while the responsible observer is still on duty.

R.A. Garrett
MIC, Topeka

Comment By Forecasts and Synoptic Reports Division:

Mr. Garrett expresses the opinion that when obvious errors in upper-air observations elicit no complaints from users, the observers get the impression their error rate is acceptable and relax their efforts to achieve the ultimate in accuracy.

We once had an arrangement whereby each forecast center was assigned a few upper-air observations to monitor, in real time, for the purpose of detecting errors and obtaining corrections in time for current use. The program was not as successful as one would expect, but perhaps it should be reintroduced and pushed with new vigor. Field comment is invited.

Length of Service Awards

40-Year Awards

Harry A. Downs
WBAS, Sea-Tac, Seattle
Raphael F. Kernan
WBAS, Great Falls

35-Year Awards

Harry Armstrong
WBAS, Atlanta
James W. Decker
WBAS, Bridgeport, Conn.
Kenneth C. Murray
WBAS, Albany, N.Y.
Raymond C. Robinson
WBAS, Akron

30-Year Awards

Gertrude Alexander,
Adm. Opr. Div., Central Office
Frank M. Asbell
WBO, Mt. Shasta

25-Year Awards

William Y. Cobb, Jr.
WBAS, Shreveport, La.
Richard N. Cook
WBO, Des Moines
Elden R. Etier
WBRS, Ft. Huachuca
Max A. Kohler
Hydro., Central Office
Sam R. Raush
PWP, San Francisco
Glen V. Sachse
WBAS, Norfolk, Va.
John J. Tamborelle
Pers., Central Office

20-Year Awards

William H. Ahl
WBAS, San Francisco
William T. Barch
WBAS, Allentown, Pa.
Hugh C. Hanton
DMO, WNA, Washington, D.C.
Walter R. Boehner, Jr.
Central Office
Ralph Burson, Jr.
WBO, New York
Ralph L. Carlson
WBAS, Providence
Charles H. Carpenter
WBAS, Brownsville, Tex.
Robert B. Carter
WBO, New Orleans
Wilburn K. Cobb
WBAS, Huntsville, Ala.
James F. Cornell
WBAS, Corpus Christi
Rufus O. Crosby
WBAS, Montgomery
Edwin F. Dahl
WBAS, Harrisburg
Gennaro A. D'Auria
WBAS, Hartford, Conn.
Victor K. Davis
WBO, Seattle
Glenn E. Denney
WBAS, San Antonio
Katherine M. Dooley
WBAS, New York
James T. Doty
WBAS, Abilene
Lorraine H. Flamming
WRPC, San Francisco
Thomas J. Floyd
WBAS, Columbus, Ga.
Robert I. Foster
DMO, WNA, Washington, D.C.
William A. Galleshaw
WBAS, Providence
Clifford J. Gaynor
WBAS, San Francisco
Theodore P. Gleiter
B&M, Central Office
William H. Hammond
RFC, Augusta
Thomas L. Jetty
WBAS, Baton Rouge
Joseph R. Krank
DMO, WNA, Washington, D.C.
Joseph Laychak
WBO, Sacramento
Henry J. McAleer, III
WBAS, Savannah
Marie M. McGonegal
Hydro, Central Office
Vivian Mills
B&M, Central Office
James W. Park
AWP, Boston
Harris J. Rainey
Adm. Ops., Central Office
Barbara F. Ritchie
MR, Central Office
Paul W. Sorenson
WBAS, Flagstaff
Sidney A. Strickland
WBAS, Jacksonville
Roger L. Torrison
WBAS, Oakland
James D. Wakefield
WBAS, Sea-Tac, Seattle
Marvin C. Walters
WBAS, Spokane
Charles T. Watson
WBAS, Knoxville, Tenn.
Alvis C. Webb
WBAS, San Antonio
Jimmy Whittemore
WBO, New York
Samuel V. Wyatt
F&SR Div., Central Office

15-Year Awards

Lyle H. Bethke
WBAS, Dodge City
Richard F. Browne
NMC, Central Office
Gerard A. DeMarrais
UCLA, Los Angeles
Alfred Fisher
AWP, New York
John F. Fogarty
WBAS, Hartford
Ella A. Gressett
RAO, Ft. Worth
Dale O. Hackett
RFC, Hartford, Conn.
Thomas B. Harris
WBO, La Jolla
Mary L. Kolden
WBO, Minneapolis
Jack R. Main
AWP, Norfolk
Robert C. Nelson
WBAS, Reno
Donald A. Richter
NMC, Central Office
M. Eleanor Sanford
DMO, Kansas City
Arthur J. Snider
WBAS, Baltimore
Norris E. Woerner
WBAS, Great Falls

Assignment No. LVIII: "An Experiment in Forecasting Rainfall Probabilities by Objective Methods," Monthly Weather Review, Vol. 90, Number 2, February 1962.

About the Assignment: This article deals with the objective forecasting of summer rainfall probabilities in the Mississippi Delta. Techniques for the selection of forecast parameters are investigated and conclusions drawn. Subjective and objective forecasts are compared in relation to improvements over climatology.

QUESTIONNAIRE

Col. 61 The fact that sea level pressure made a good showing as a predictor:

1. was due to a poor choice of other predictors
2. is proof enough of the importance of this predictor
3. does not give assurance that it will perform favorably with other samples
4. eliminates any need for non-linear operators

Col. 62 The results of the objective techniques:

1. were compared with experimental probability-of-rain forecasts made twice a day
2. were compared with probability forecasts made by three forecasters once a day
3. were in all cases very promising
4. probably are not biased due to using the same data sample

Col. 63 Regarding the use of non-linear parameters, the author concludes:

1. almost any non-linear parameter would give more positive results
2. a non-linear approach should have been attempted with the data sample used
3. that some non-linear parameters from dynamic models would be an improvement over a strictly linear technique
4. they can contribute nothing more than what well-chosen linear parameters contribute

Col. 64 Table 7 shows:

1. screening by pairs to be a much better technique
2. that the variables picked by the two methods were very nearly the same
3. evidence of the redundancy of information in meteorological variables
4. a comparison of three variations of principal component techniques

Col. 65 According to this article, which of the following statements are true (one or more):

1. Experience is probably the best guide to follow in determining how many terms to retain in a regression equation.
2. 500-mb. heights are better specifiers than predictors.
3. There is only one good statistical significance test applicable to the screening technique.
4. Many of the prediction equations did not yield acceptable forecasts for the test period.

Col. 66 General rainfall in the area of study could usually be attributed to:

1. an active Low or to an instability line moving through the area
2. high relative humidity near the surface
3. a wide variety of situations
4. southerly movement of the jet stream over the area

Col. 67 When the screening regression was carried out for each type of predictor separately:

1. no predictor gave any predictive information
2. all the predictors appeared to be equally useful
3. only sea level pressure, surface dew point, and surface temperature appeared useful
4. the best predictor was the 500-mb. height

Col. 68 Many of the equations derived in this study gave poor results when applied to independent data. This can probably be improved by:

1. using a larger area and more data
2. better selection of the predictors, taking physical considerations into account
3. improving the weather code derivation technique
4. extending the period of study so as to cover several more years

Col. 69 Which of the following statements are true?

1. The weather code predictor was the only "derived" predictor and was a function of cloudiness, humidity, and ceilings.
2. Principal component analysis seemed to give more stable relationships than the screening regression technique.
3. One advantage of the principal component analysis is that the variables need not be reasonable from a physical standpoint.
4. The weather code alone is not too useful as a predictor.

Col. 70 This study shows that in choosing a network from which to gather predictor data, it is better to:

1. use a large area with sparse network than a smaller area with a denser network
2. the reverse of (1), above
3. use a network totally inside the area for which predictions are to be made
4. use a network composed entirely of first-order stations

Volume 21 JUNE 1962 Number 5

CONTENTS

Editorial: The WMO Report	86
Topigrams	87
Briefs from the CO Staff Conferences	88
Dr. Singer Directs Bureau Space Program	89
WMO Proposes World Weather Watch	90
Dr. Barger Co-Authors Bibliography	90
1962 Hurricane Season Begins	91-92
WBRS, Fort Huachuca	93-94
Scientists in the Commerce Department	94
Lightning Strikes Forecaster's Home	94
Budget Bureau Studies Government Weather Programs	95
Welcome to the Weather Bureau	96
Transfers	96
Retirements	97
Communication Problems in 1919	97
Forecasters' Forum	98
Length of Service Awards	98
Meteorological Readings	99

The cover photograph shows crepuscular rays, caused by stratocumulus clouds, over the Pacific Ocean. In the Pacific Islands, these rays are called "Ropes of Maui."

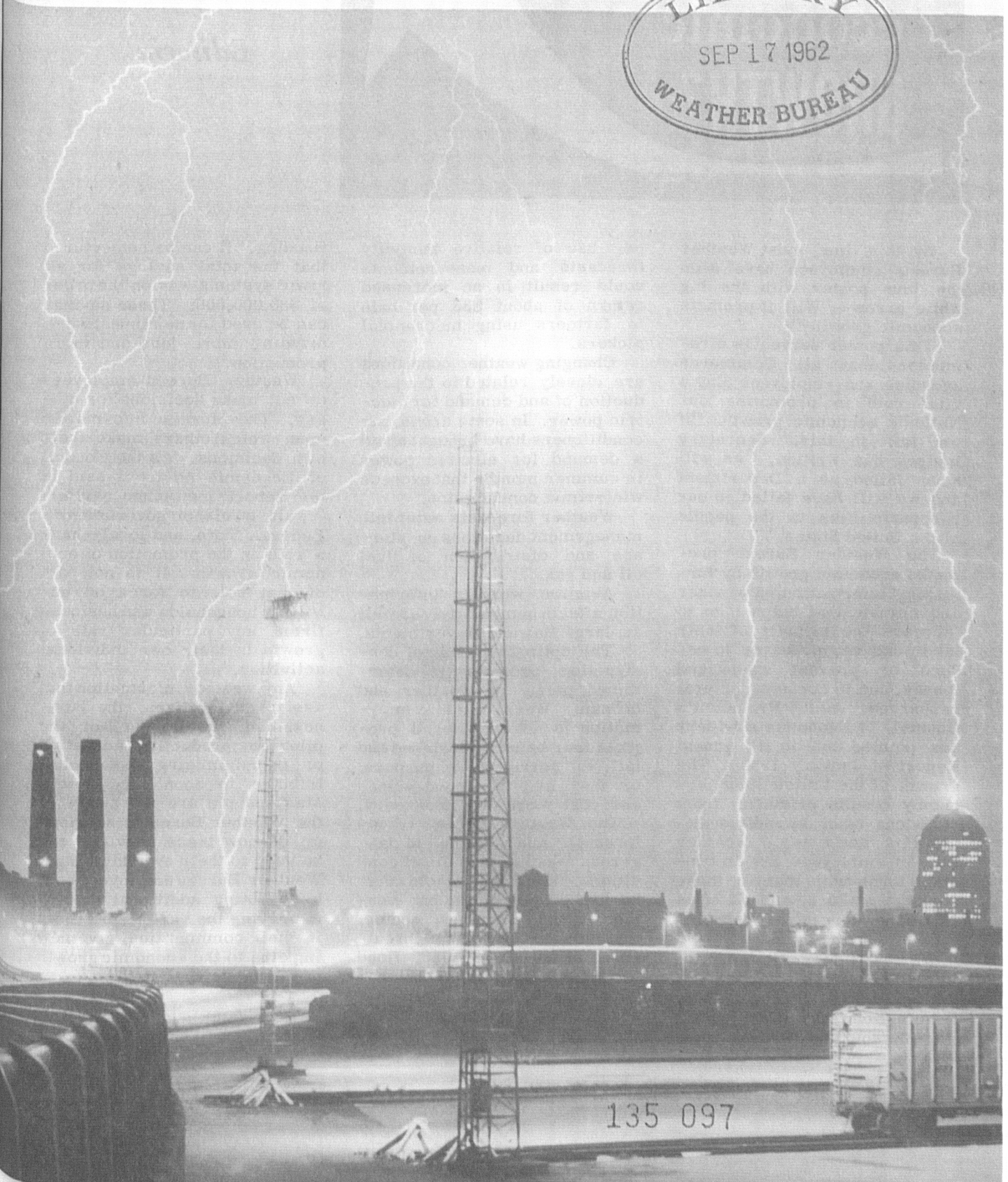
WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU
Volume 21 JULY 1962

TOPICS

C/

LIBRARY
SEP 17 1962
WEATHER BUREAU



135 097

Editorial

By this time, most Weather Bureau employees have seen the blue poster with the big white arrow--"Will it promote economic growth?"

This poster serves as a reminder that all Commerce agencies and employees play a vital role in promoting our Nation's economic growth. "If we fail in this," Secretary Hodges has written, "we will have failed as a Department and we will have failed in our responsibilities to the people of the United States."

The Weather Bureau promotes economic growth by furnishing information on weather and climate that helps men to increase the product of their labor and resources or to reduce or prevent waste and losses, and to conserve natural resources. As the President's Council of Economic Advisers has pointed out, in its Annual Report of January 1962: "The growth of the United States economy results primarily from decisions taken by individuals, families, and firms." Weather Bureau employees are in constant touch with many of these decision-makers, and all of us should be alert to the opportunities of serving them.

Weather information supplied to farmers can reduce production costs. A recent study from cotton fields in southeastern Missouri showed that proper use of relative humidity forecasts and measurements could result in an increased return of about $35 per bale to farmers using mechanical pickers.

Changing weather conditions are closely related to the production of and demand for electric power. In some areas, air conditioners have brought about a demand for electric power in summer months that exceeds wintertime consumption.

Weather forecasts enter into management decisions on storage and distribution of fuel oil and gas.

Aviation weather information affects human safety as well as large financial investments.

The optimum design of construction projects is determined partly by weather and climate. When climatic information is not considered, projects may be underdesigned and fail to serve their purpose, or they may be overdesigned and cost more than necessary.

The Weather Bureau issues forecasts and warnings of dangerous weather and flood conditions. Each year untold numbers of people, acting on Weather Bureau warnings, protect their property or leave threatened areas. In 1960, flood warnings issued by the Weather Bureau resulted in an estimated $12,000,000 savings for 15% of the river systems reporting flooding. It can be conjectured that the total savings for all river systems was on the order of $80,000,000. These savings can be used for new investment, creating more jobs and more production.

Weather Bureau employees do not make decisions for others. They furnish information upon which others make their own decisions. As the Council of Economic Advisers said in the report mentioned earlier: "...all levels of government--Federal, State, and local--have a role in the promotion of economic growth. It is not part of that role to force on unwilling households and business firms any particular rate of growth in their own individual activities."

Any weather information that assists the citizen, the businessman, the farmer, or the pilot in productive activities or in minimizing losses contributes to economic growth. Many people are not aware of the Weather Bureau's services or of how these services can be used to their own advantage. Weather Bureau employees can, by devoting additional thought to serving the various interests in their communities, give new impetus to the economic growth of the entire Nation.

J. W. O.

Topigrams

Washington, D.C.
July 1962

A report calling for tripling the national program in the atmospheric sciences during the next decade has been submitted to the President's Special Assistant for Science and Technology by the National Academy of Sciences-National Research Council. The three-volume report, "The Atmospheric Sciences 1961-1971," was developed under the direction of Dr. Sverre Petterssen of the University of Chicago and Dr. C. Gordon Little of the National Bureau of Standards, by the NAS-NRC's Committee on Atmospheric Sciences. According to the report, four major steps must be taken during the next ten years if the United States is to achieve an adequate understanding of atmospheric processes, form a sounder scientific foundation for weather prediction, and determine the possibilities of modifying the weather on a large scale. (1) Scientific manpower and the funding of research must be increased threefold. (2) The university output of doctorates in the atmospheric sciences must be increased by a factor of at least four or five. (3) Universities with a crucial role in graduate and research training programs in this field must broaden and strengthen their programs to become national centers of academic and scientific excellence. (4) Government research agencies concerned with the atmospheric sciences must develop more vigorous research and educational programs.

The Bureau's Meteorological Satellite Activities organization has a new name -- the National Weather Satellite Center. The Center is responsible for the development and management of the National Operational Meteorological Satellite System.

All Commerce agencies conducting scientific or technical programs are represented on the Commerce Committee on Science and Technology. An important function of this committee is to keep Assistant Secretary Hollomon informed of Department activities relating to science and technology. Meeting every other Thursday, the agency heads or their representatives discuss problems of common interest to two or more Commerce agencies or matters affecting the Department as a whole.

A special facility for scientific balloon flights will be established this summer at Palestine, Texas, by the National Center for Atmospheric Research. Known as the NCAR Scientific Balloon Flight Station, the facility is designed to accommodate all balloons, payloads, and launching techniques now used or contemplated. The station will be open to all scientists regardless of affiliation, but emphasis will be placed on difficult flights whose success would advance balloon technology. The National Center for Atmospheric Research will operate the station and set priorities for its use with the advice of its Panel on Scientific Use of Balloons. Dr. James K. Angell of the Weather Bureau is a member of this Panel.

Under a renewed agreement with the Atomic Energy Commission covering fiscal year 1963, the Weather Bureau will continue to provide weather support for AEC's Nevada tests--including Projects Nerva and Pluto and the Plowshare and Vela-Uniform Programs--and to conduct research in weather and surface radiation prediction. Other programs conducted by the Weather Bureau for the AEC will continue work in global fallout studies and aerospace and reactor testing support.

Briefs from the CO Staff Conferences

The WMO Report to the United Nations ("First Report on the Advancement of Atmospheric Sciences and Their Application in the Light of Developments in Outer Space") was discussed by staff. The Report was written in response to UN Resolution 1721 and should be interpreted in light of the context of that Resolution and related WMO discussions. The Report is preliminary and does not constitute a fixed or final program. It does not cover research plans, which are left for research scientists to be nominated by interested international bodies in addition to WMO. The research planning committees will be composed of scientists who are active in research and are free to plan independently of parent bodies. All countries will have an opportunity to present their views when the report is discussed by ICSU and UNESCO and by the WMO Congress in April 1963.

The Weather Bureau has been invited to furnish facsimile weather maps and TIROS data for relay to Europe by the new Telstar satellite. The special program is scheduled for August.

The Coast and Geodetic Survey has proposed that Commerce scientific bureaus sponsor legislation to permit the granting of scholarships for graduate study to non-government personnel. The purpose would be to interest students in the sciences applied by Commerce bureaus, especially the geophysical sciences. The Weather Bureau has expressed its interest in this proposal and will work with C&GS on it.

The staff was informed of the Department's basic policy governing procurement of office equipment, furniture, and furnishings. These items are to be procured from GSA-FSS contracts, except in the rare instances where there are urgent and compelling reasons for not using such contracts. In those instances, a report setting forth the circumstances shall be submitted to the Director, Office of Administrative Operations, for post-review.

It was announced that Dr. G.D. Kinzer will serve as Chief of the Instrumental Engineering Division in addition to his responsibilities as Director of the Physical Science Laboratory.

The Commerce appropriations bill for fiscal year 1963, passed by the House of Representatives, reduced the amounts requested for the Weather Bureau in the President's Budget as follows:

	S&E	R&D	EMF	MSA
Requested	59,500,000	11,500,000	4,500,000	45,000,000
Allowed	58,250,000	10,000,000	4,000,000	40,000,000

In hearings before the Senate Appropriations Subcommittee, the Weather Bureau has appealed for restoration of most of the funds disallowed by the House, except for $5 million for Meteorological Satellites.

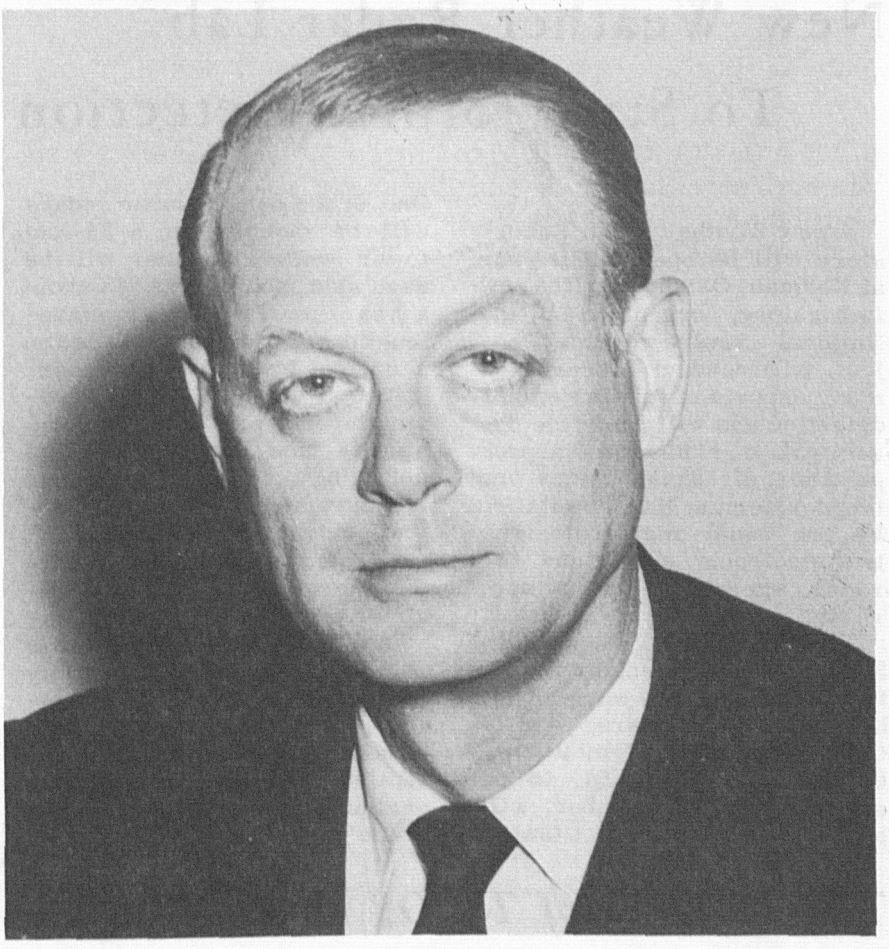
Eleven Amos IV's Ordered By Bureau For 1963 Delivery

After three years of development and testing, the Weather Bureau has placed an order for eleven new automatic meteorological observing stations. The new systems are called AMOS IV--"AMOS" being the abbreviation for automatic meteorological observing station, and "IV" signifying that the system is the fourth model to be developed and used operationally.

The developmental work was done by the Weather Bureau in cooperation with the National Bureau of Standards and was funded jointly by the Federal Aviation Agency and the Weather Bureau.

AMOS IV represents a milestone in the development of automatic stations. It is more efficient than its predecessor, AMOS III. New features incorporated in AMOS IV include the ability to take a complete new observation once a minute, feed visual displays of the various parameters, give a meaningful measure of cloud height, calculate sea level pressure, and give the pressure change and amount every three hours. Many concepts found in digital computers are used in AMOS IV, but it is a meteorological tool with features not found in commercial digital computers.

The first AMOS IV's should be installed in approximately 12 to 18 months. They will be placed at widely scattered points throughout the 50 states, including Sisters Island, Alaska; Catalina Island, California; and St. Petersburg, Florida. Present plans call for the installation of equipment of this capability at many more stations in the next ten years.



Herbert W. Klotz

Herbert W. Klotz Appointed Commerce Assistant Secretary

On June 20, the Senate confirmed the nomination of Herbert W. Klotz as Assistant Secretary of Commerce for Administration. Mr. Klotz has been Deputy to Secretary Hodges since January 1961.

Born in Berlin, Germany, Mr. Klotz was educated in private schools in Germany and Switzerland and holds a B.A. degree from Zuoz College, Switzerland. He did postgraduate work in economics at the University of Zurich.

After entering the U.S. Army as a private in 1942, he served overseas as an Intelligence Officer with the Third U.S. Army. He holds the rank of Major, Army Intelligence, U.S. Army Reserve.

Mr. Klotz is an investment banker by profession. Before joining the Commerce Department in January 1961, he was associated with the Washington office of Alex Brown and Sons.

New Weather Radar Lab To Study Storm Detection

A new Weather Radar Laboratory will be opened this year at Norman, Oklahoma. The new Laboratory, organized by the National Severe Storms Project, will conduct research on many aspects of severe weather detection and will study the dynamical and kinematical properties of squall lines and thunderstorms. It will be staffed by two radar meteorologists, two electronic technicians, two radar operators, and a secretary.

The facility will use a WSR-57 (10-cm. wavelength) radar, two MPS-4 (5 cm. wavelength) height finder radars, and a C-W Doppler radar in its research. The WSR-57, to be operational in November, will be mounted on a 70-foot tower. One of the height finder radars will be mounted on a 35-foot tower while the other will be used as a mobile unit. In about a year, a CPS-9 (3-cm wavelength) radar will be installed on a 55-foot tower. Radars operating at three different wavelengths will provide great versatility and the capability of obtaining multi-wavelength measurements of meteorological phenomena.

Located adjacent to the Atmospheric Research Laboratories of the University of Oklahoma, the Laboratory will have a complete electronic facility and equipment for the maintenance and calibration of the radars. Complete viewing facilities will be available for studying time lapse photographs of the radar findings.

Transmission of TIROS Mosaics Begins; Eight Bureau Stations To Receive Photos

Mosaics of TIROS V photographs are now being transmitted from the National Meteorological Center to selected Bureau stations equipped with high-resolution, high-speed photofacsimile recorders. The photomosaics supplement the TIROS nephanalyses and provide more detailed information to Bureau stations and other users.

The mosaics are prepared at the readout stations and sent to Suitland, where they are reviewed by Meteorological Satellite Activities. Appropriate mosaics are then transmitted on the High-Altitude Facsimile Network to stations on the U.S. mainland and by message toll telephone to stations outside the continental United States.

The experimental program began in May with transmission to Idlewild only. In July, the service was extended to Miami, San Juan, and New Orleans, so that the hurricane warning centers would have the satellite photographs to aid in tracking and forecasting tropical storms. The photomosaics are also received at Miami by way of the Project Mercury lines from Suitland.

The special recorders required to receive the mosaics will be installed at San Francisco and Honolulu in August and at Kansas City and Anchorage about November.

The U. S. Air Force also plans to install the units at Charleston Air Force Base in South Carolina and Patrick Air Force Base in Cocoa Beach, Florida.

Pilot to Forecaster Weather Service Test Expands to Los Angeles

The experimental pilot-to-forecaster service, inaugurated by the Federal Aviation Agency and the Weather Bureau on July 1, 1961, has proved so popular with pilots that the test units at Kansas City and Washington, D. C., will be continued and a new unit will soon be established at Los Angeles.

The Washington and Kansas City units will operate on their present frequency—122.6 mc.—until October 1. By that date, the Los Angeles service will be in operation, and all three units will switch to a new frequency that can be given national application.

The 24-hour service augments the standard aviation weather service by furnishing information directly to airborne pilots who encounter unexpected weather conditions. Pilots flying within range of the Washington and Kansas City units can switch to the special frequency and speak directly to a Weather Bureau forecaster who will provide the needed weather information. At the same time, the forecaster gains new knowledge of conditions aloft, which he transmits to other pilots, to air traffic controllers, and to FAA flight service stations.

Twenty-four Weather Bureau employees are assigned to the project. The Washington unit is located in the Air Route Traffic Control Center. Transmitter-receiver stations at Front Royal, Roanoke, and Richmond, Virginia, provide a range of several hundred miles. The Kansas City pilot-to-forecaster unit is in the downtown Weather Bureau Office, and its single transmitter-receiver has a range of about 150 miles.

Augusta River Center Holds First Conference With RDO Officials

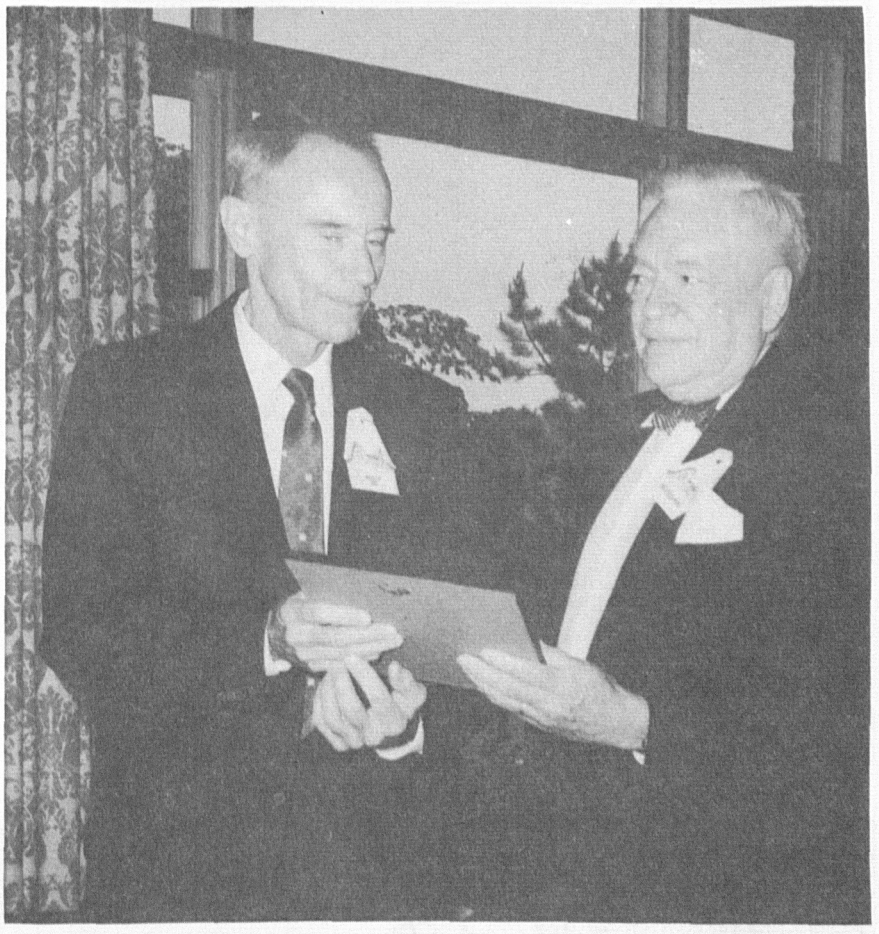
Representatives of all River District Offices served by the Augusta, Georgia, River Forecast Center met in Augusta from June 4 to 8 to discuss the hydrologic work of the Weather Bureau in the Southeast.

This was the first such meeting since the Augusta River Forecast Center went into operation in 1955, and the discussions helped to make the River Forecast Center and the River District Offices more aware of each other's problems.

Discussed Forecast Methods

The topics considered included forecasting methods employed by the River Forecast Center, collection of rainfall and river data and dissemination of forecasts by the River District Offices, communications, needed improvements in the hydrologic reporting networks, and the use of radar for hydrologic purposes.

The conferences were attended by Ralph Kresge, Eastern Area Hydrologic Engineer; R. J. MacConnell, South Central Area Hydrologic Engineer; W. E. Fox, Hydrologist in Charge, and R. M. Greening, Assistant Hydrologist in Charge, Augusta River Forecast Center; C. C. Wooden, MIC, WBAS, Augusta; Rolen Cornelius, WBAS, Atlanta; John Cummings, MIC, WBAS, Charleston, S. C.; John Purvis, MIC, WBAS, Columbia, S. C.; William Miller, MIC, WBAS, Macon, Ga.; William Tilson, MIC, WBAS, Mobile, Ala.; A. R. Long, MIC, WBAS, Montgomery, Ala.; and Lawrence Dye, WBAS, Tampa, Fla.



Dr. Wulf (left) accepts the Goddard Award from Phillip M. Morgan, chairman of the WPI Board of Trustees.

Dr. Wulf Receives Goddard Award From Worcester Polytechnic Institute

On June 9, Dr. Oliver R. Wulf of the Weather Bureau was honored by Worcester Polytechnic Institute for his outstanding professional achievements. Dr. Wulf, who is a research meteorologist assigned to the California Institute of Technology, received WPI's Robert H. Goddard Award at the annual Alumni Luncheon in Worcester.

The Award, presented jointly by the College's Board of Trustees and Alumni Association, is named for Robert H. Goddard of WPI's class of 1908, who pioneered in rocket research as early as 1926.

The citation for Dr. Wulf read:

"A graduate of the Class of 1920 in chemistry, he received his Master of Science degree from American University in 1922 and his Doctorate from The California Institute of Technology in 1926.

"Author of numerous papers, he is a Fellow of the American Physical Society and a member of the National Academy of Sciences.

"He is recognized as a world authority on atmospheric and solar physics and chemistry, and the meteorology of the upper atmosphere."

Left, at the Weather Bureau orientation program, Dr. Reichelderfer greets Robert Newman, the Bureau's student chairman. Looking on is Albert V. Carlin, Chief of the Training Section.

Right, President Kennedy gets acquainted with students before the White House Seminar on June 20. UPI Photograph

Below, David Frome, a student employee at the National Meteorological Center, explains the data plotter to visiting students.

Student Employees, 1962

The summer of 1962 has been an eventful one for the 80 students working in the Weather Bureau's Central Office.

On June 20, all students employed by the Federal Government in the Washington area were treated to a special welcome from President Kennedy. The President spoke to the students at the first of a series of eight White House Seminars. At later meetings, the functions of the various branches and agencies of Government were explained by Senators, Congressmen, and high administration officials.

The Department of Commerce held an orientation program for its student employees in the Washington area. An exchange program was arranged to allow the Department's student employees to visit other Commerce agencies. On August 9, 50 students from other agencies toured the Weather Bureau Airport Station, the National Meteorological Center and Meteorological Satellite Activities.

The Weather Bureau conducted an orientation program on July 12 and 13. Addresses by Dr. Reichelderfer and Mr. Grubb were followed by a panel discussion conducted by Mr. J.J. Davis, Chief of the Personnel Management Division. Members of the panel were N.A. Lieurance, Associate Chief for Aviation; T.P. Gleiter, Chief of the Budget and Management Division; James M. Beall, Public Information Officer; and H. R. McBirney, Assistant Chief of the Instrumental Engineering Division. The students then visited the Airport Station, the NMC, Meteorological Satellite Activities, and the Instrumental Engineering Division.

New MIC's Selected For Five Stations

Klamath Falls

Robert E. Cardinal, the new Meteorologist in Charge of the Weather Bureau Airport Station at Klamath Falls, Oregon, began his career in meteorology in the U.S. Air Force during World War II. After his discharge from the Air Force, Mr. Cardinal was in private business until 1951 when he joined the Weather Bureau at Duluth. He subsequently served at St. Joseph, Missouri, and Sault Ste. Marie before returning to Duluth as Principal Assistant. Mr. Cardinal has studied at Eau Claire State College and the University of Utah.

Pocatello

Henry R. Mansfield has been named Meteorologist in Charge at Pocatello, Idaho. A former teacher, Mr. Mansfield served as a weather observer and forecaster in the U.S. Air Force during World War II and holds a B.S. in meteorology from Pennsylvania State University. Since joining the Bureau in 1947, Mr. Mansfield has been stationed at Huntington, West Virginia, Rochester, Minnesota, and Idaho Falls.

Richmond

Joseph T. Harden has been named Meteorologist in Charge of the Weather Bureau Airport Station at Richmond, Virginia. Mr. Harden has been with the Bureau since 1939 and has served at Montgomery, Alabama; Tallahassee, Florida; Butler and Atlanta, Georgia; Raleigh, North Carolina. He was Principal Assistant at Richmond from 1955 until his appointment as MIC. Mr. Harden attended the University of Arkansas and Richmond Professional Institute and studied meteorology at the Pennsylvania State University.

Huron

William H. Wells has been appointed Meteorologist in Charge of the Weather Bureau Airport Station at Huron, South Dakota. Mr. Wells joined the Bureau at North Platte, Nebraska, in 1941. He transferred to Huron in 1947 and was a Supervisory Meteorologist there when appointed MIC. A former teacher, he received a Bachelor of Science degree from the University of Nebraska and has done graduate work in meteorology at the Department of Agriculture Graduate School.

Concordia

Lee L. Stinson has been appointed Meteorologist in Charge of the new Weather Bureau Airport Station at Concordia, Kansas. Mr. Stinson joined the Bureau in 1945 at Grand Junction, Colorado. He later served at St. Joseph, Missouri, and was MIC at Concordia from 1950 to 1955 when he transferred to Denver. He received meteorological training in the U.S. Navy and has studied at Washburn University, the University of Maryland, the University of Colorado, and Pennsylvania State University.

Length of Service Awards

45-Year Awards
John J. Brennan
Pers., Central Office
Olive M. Long
Adm. Ops., Central Office

35-Year Awards
George H. Belt
B&M, Central Office
William A. Cupples
WBAS, Red Bluff
Harry M. Gerber
WBAS, Pittsburgh
Charles F. Jespersen
WBAS, Burlington, Iowa
Ernest M. Rampey
WBAS, Knoxville, Tenn.
Harold A. Sawyer
WBAS, El Paso

30-Year Award
Jerome van de Erve
WAHE, Sacramento

25-Year Awards
Morris A. Arkin
O&SF, Central Office
Pauline Beers
F&SR, Central Office
Leslie M. Hobson
WBAS, Cleveland
Alvin D. Murphy, Jr.
Pers., Central Office
Oscar N. Norman
WBAS, Lakeland, Fla.
Gilley T. Stephens
WBAS, Memphis
Harry L. Swift
F&SR, Central Office
William J. Trebbe
WBAS, St. Cloud, Minn.
Joseph Vederman
WBAS, Honolulu
Leonard L. Weiss
Hydro., Central Office
Henry W. Wibert
Adm. Ops., Central Office

20-Year Awards
Alma W. Abernethy
NWRC, Asheville
Paul A. Allee
Phys. Sci., Central Office
Earl F. Beal
Adm. Ops., Central Office
Max L. Caldwell
WBAS, San Francisco
Norman L. Canfield
NWRC, Asheville
Earl B. Clark
RAO, Ft. Worth
Salvadore Diaz
WBAS, Williamsport, Pa.
James H. Eggleston
WBAS, El Paso
Jordan Fischler
F&SR, Central Office
Robert C. French
WBAS, Oklahoma City
Elizabeth M. Fretwell
WBAS, Kahului
Norman W. Graham
NWRC, Asheville
Melvin D. Green
Adm. Ops., Central Office
Russell A. Grosse
F&SR, Central Office
Charles M. Hoover
F&SR, Central Office
Robert T. Kurtz
WBAS, New York
Francis J. Lacny
NMC, Central Office
Helmut E. Landsberg
Climat., Central Office
Paul J. New
WBAS, Nashville
Garland L. O'Shields
NWRC, Asheville
Ruth E. Owens
WBAS, Norfolk
John M. Porter
F&SR, Central Office
Welba S. Reid
WBAS, Dayton
Thad C. Roberts
NWRC, Asheville
Henry W. Schultz
WBAS, Boise
William H. Seay
Instr., Central Office
Raymond H. Smith
NWRC, Asheville
Mary D. Watts
F&SR, Central Office
Richard S. Way
WBAS, Sea-Tac, Seattle
Major F. White
Adm. Ops., Central Office

15-Year Awards
Margie C. Belt
Adm. Ops., Central Office
Carl P. Caterino
RAO, New York
Fredric L. Darling
NMC, Central Office
Ronald L. Dorsey
WBAS, Lander, Wyo.
Joseph G. Galway
DMO, Kansas City
Donald A. Halvorson
WBAS, San Diego
Miriam C. Hood
NWRC, Asheville
John L. Koch
WBAS, Spokane
Edward E. Kutney
NMC, Central Office
Charlie E. Lyon, Jr.
Adm. Ops., Central Office
Marian F. Olson
DMO, Kansas City
Mary J. Palumbo
RAO, New York
Alden P. Richter
WBO, Wallops Island
Milton I. Rudd
WBO, Galveston
Kathryn S. Tammaro
Adm. Ops., Central Office
Joyce W. Tracy
WBAS, Harrisburg
Gloria K. Twyman
NMC, Central Office
Oliver L. Wattenbarger
WBAS, Eniwetok
Richard N. Whitson
NWRC, Asheville

Dr. Harry Wexler Dies; Directed Bureau Research

"He has. . . had a distinguished career. Were there more men like him, giving their time and talents to the public service, I am sure this government and country would be the better for it." (Secretary of Commerce Luther H. Hodges, speaking before the Federal Civil Service League, March 21, 1961)

Dr. Harry Wexler, the Bureau's Director of Meteorological Research, died in Boston on August 11.

Through his own research and his leadership in national and international programs, Dr. Wexler attained worldwide prominence. At the same time, his achievements contributed much to the respect and recognition accorded to the U.S. Weather Bureau.

Harry Wexler was born in Fall River, Massachusetts, in 1911. He spent his undergraduate years at Harvard, where he received a B.S. in mathematics in 1932. He did graduate work at the Massachusetts Institute of Technology and received his Sc.D. in meteorology in 1939.

From 1934 to 1937, he worked for the Weather Bureau in Chicago and in Washington. He was appointed assistant professor of meteorology at the University of Chicago in 1940 and left this position in late 1941 to return to the Bureau. In November 1942, he joined the Army Air Force's Weather Service as a Captain and became senior instructor in meteorology at the Aviation Cadet School in Grand Rapids, Michigan.

In late 1943, Dr. Wexler was transferred to the Army Air Force's Weather Division in Washington, wher he served as research executive. He began a program of weather research that has since developed into an extensive interdisciplinary program in geophysics.

Dr. Wexler returned to the Weather Bureau in 1946 as head of its research program. Many of the Bureau's most important research projects were initiated under his guidance. He was one of the first scientists to foresee the use of satellites for weather observations. He was a leader in the development of numerical weather prediction. He directed the investigation of tornadoes and severe local storms and of the general circulation of the atmosphere.

As his reputation grew, he was called upon to participate in the most important national and international activities in meteorology and related sciences. In 1955, he was a member of the U.S. delegation to the "Atoms for Peace" conference in Geneva. He was a member of the U.S. National Committee for the International Geophysical Year and served as Chief Scientist for the U.S. IGY Antarctic Program. Most recently, he worked with Professor V. A. Bugaev of the Soviet Union in drafting the WMO's proposal for a "World Weather Watch" (see TOPICS, June 1962, page 90).

In addition to his numerous other duties, Dr. Wexler continued to carry out independent research. He published nearly a hundred papers in scientific journals.

Gold Medal Winner

His outstanding contributions to science brought him many awards: the Robert M. Losey Award; the U.S. Air Force Award for exceptional service as a member of the Scientific Advisory Board to the Air Force Chief of Staff; the U.S. Navy Distinguished Public Service Award and the Department of Commerce Gold Medal for his leadership of the International Geophysical Year Program; and in 1961, the Federal Civil Service League's Career Service Award.

Dr. Harry Wexler

AMS Vice President

Dr. Wexler was a past vice president of the American Meteorological Society, a fellow of the American Academy of Arts and Sciences, and a member of the Royal Meteorological Society, the American Geophysical Union, the British Glaciological Society, and the Cosmos Club. Committees on which he served included government panels on meteorological satellites and the biological effects of atomic radiation, as well as the Space Science Board and polar research committee of the National Academy of Science. He was a member of the Committee on Space Research (COSPAR) of the International Council of Scientific Unions.

He is survived by his wife, Hannah P. Wexler, and two daughters, Susan and Libby, who live at 204 South Lee Street, Falls Church, Virginia.

Three State Climatologists Named

Edgar J. Saltsman has been named State Climatologist for Louisiana and Mississippi. Mr. Saltsman has been with the Bureau since 1927 and has served at Sandusky, Ohio, Fort Wayne, Indiana, Cleveland, Detroit, New York, Newark, Albany, New York and Asheville. His most recent position was with the Climatic Advisory Service Branch of the Office of Climatology. Mr. Saltsman served in the Air Force during World War II and left active duty as a Major in 1946. He has attended Cleveland College, Indiana University, New York University, the John Huntington Polytechnic Institute, Siena College, and the Department of Agriculture Graduate School.

The new State Climatologist for New Mexico is Frank E. Houghton, whose most recent Bureau assignment was in the Office of Planning. After four years as a weather observer with the Air Force, Mr. Houghton joined the Weather Bureau in 1946. He has served at Boise, Idaho, Seattle, and Eugene, Oregon, and moved to the Central Office in 1955. A former math and science teacher, he has a bachelor's and a master's degree in education from the Massachusetts State Teachers College. He has studied meteorology and related subjects at Pennsylvania State University, the Department of Agriculture Graduate School, the University of Virginia, and the University of Oregon.

Walter S. Spuhler has been appointed State Climatologist for South Dakota. Mr. Spuhler, after graduating from the University of Nebraska in 1940, received an M.S. in meteorology from the California Institute of Technology, and worked as a meteorologist in private industry before rejoining the Bureau in 1949. He has served at Tulsa, Burbank, and Lewiston, Idaho, and was with the Weather Bulletin Unit of the Forecasts and Synoptic Reports Division at the time of his appointment as State Climatologist.

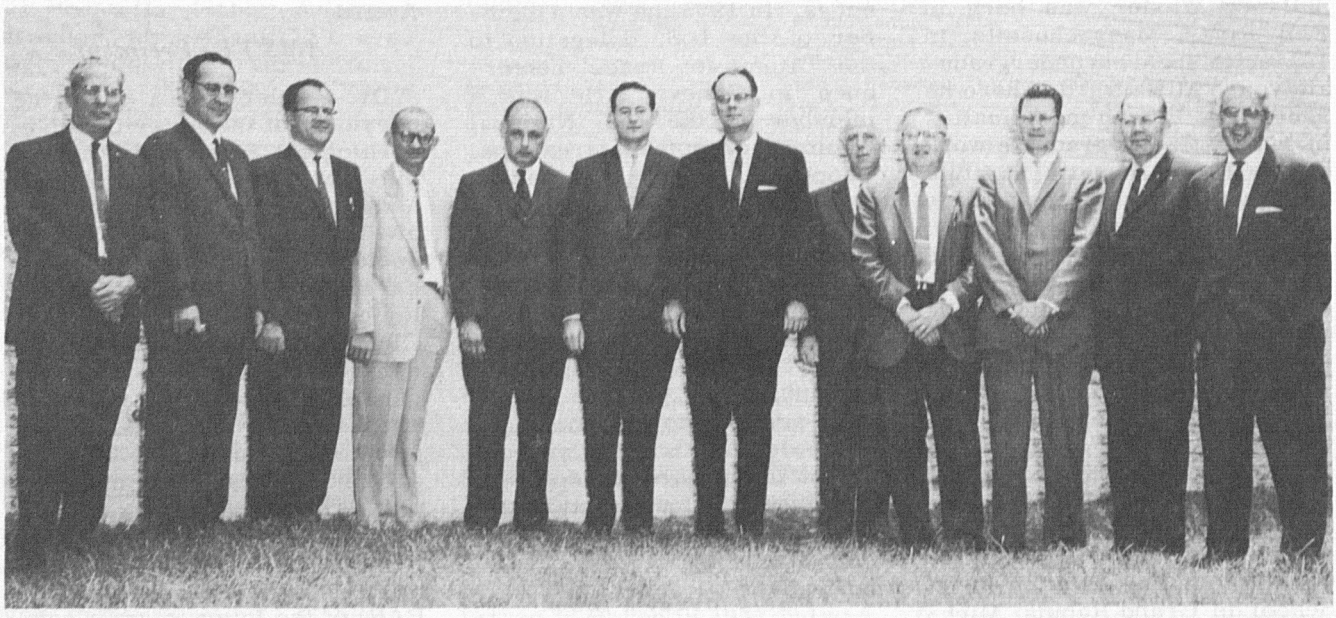
DEATHS

Earl E. Shay

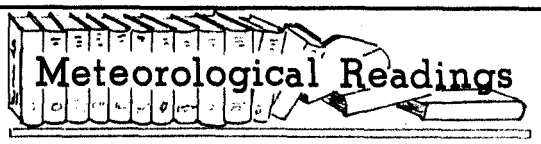
Earl E. Shay, former Assistant Foreman for Photography in the Central Office Printing Section, died May 21. Mr. Shay retired from the Bureau on October 31, 1959, after more than 27 years of government service. A World War I veteran, Mr. Shay joined the Weather Bureau in 1942 after having served with the Patent Office and the Department of Agriculture. He is survived by his daughter, Mrs. Delores Stamps.

Reuben L. Frost

Reuben L. Frost, retired Meteorologist in Charge at Wilmington, North Carolina, died July 12. A veteran of World War I and II, Mr. Frost's Bureau assignments included Portland, Oregon, Fairbanks, Richmond, Key West, and Wilmington. He was awarded the Department of Commerce Silver Medal for Meritorious Service in 1955. He retired from the Bureau in 1959.



THE WEATHER BUREAU'S HYDROLOGISTS-IN-CHARGE met in Washington during the week of June 11. Above, left to right, are Paul Jones, Tulsa River Forecast Center; Ray Johnson, Kansas City RFC; Eugene Peck, Salt Lake City Water Supply Forecast Unit; Charles Hopkins, Hartford RFC; Walter Sittner, Washington, D. C., River Forecast Unit; Ed Fox, Augusta RFC; O.D. White, WBAS Harrisburg; John P. McCallister, Fort Worth RFC; Phil Light, St. Louis RFC; Vernon T. Houghton, WBO Pittsburgh; Roy Lundquist, Cincinnati RFC; and Tony Polos, Portland RFC.



Assignment No. LIX: "The Hurricane Season of 1961," by G. E. Dunn and Staff, Monthly Weather Review, Vol. 90, No. 3, March 1962, pp. 107 - 119.

About the Assignment: The 1961 hurricane season was of great interest because of the number and variety of storms. Esther and Carla are both worthy of further study -- the former because of its unusual path -- the latter because of its destructiveness.

QUESTIONNAIRE

Col. 61 Hurricanes Debbie and Betsy had at least one thing in common (mark the correct answer):

1. neither affected any land areas
2. both had central pressures below 930 mb.
3. both recurved well south of the 30° latitude
4. neither affected the U. S. mainland

Col. 62 Although Esther did little damage comparatively, it will be remembered because:

1. it moved in an unusual loop off the East Coast of the U. S.
2. it was the first hurricane ever seeded
3. it helped demonstrate the value of satellites for tropical storm detection
4. its looping path was successfully predicted

Col. 63 The probable reason for so much hurricane activity after Sept. 1st was:

1. unusually strong easterlies near the Equator
2. a deep trough over western North America together with positive height departures of about 180 feet at 700 mb. over northeastern United States
3. unusually far north displacement of the jet stream over the eastern Pacific
4. the negative departures of sea-surface temperature over the Atlantic

Col. 64 Which of the following remarks is (or are) true of the 1961 hurricane season?

1. All portions of the Atlantic experienced hurricane conditions at some time.
2. The number of hurricanes recorded in one season broke all previous records.
3. All the storms except one developed after Sept. 1.
4. On Sept. 11, four storms of full hurricane intensity were active simultaneously.

Col. 65 Hurricane Carla was the most damaging storm of the season. The following statements are true about Carla:

1. At its development, it was associated with an anticyclone in the upper troposphere over the Caribbean
2. Peak gusts of 175 m.p.h. were estimated on the Texas coast as it moved inland.
3. It produced unusually high tides only to the west of its track.
4. It moved fairly rapidly through the Gulf and therefore did less damage than it might have.

Col. 66 An important feature of figure 15 is that:

1. it shows a significant 95 kt northerly wind at Grand Cayman Island
2. it, like figure 10, illustrates an effective high-level evacuation of the rising lower level air
3. from it one can explain the unusual path taken by hurricane Hattie
4. it demonstrates that the 200-mb. chart is the only chart of any value for assessing the possible intensification of hurricanes in regions of rare occurrence

Col. 67 On October 29, 1961, hurricane Hattie appeared to be heading for Cuba. Instead it turned sharply to an eventual west-southwesterly course:

1. at least partly because of the intensification of the mid-tropospheric anticyclone in the Gulf of Mexico
2. simply because normally the broad scale climatological controls in October favor just such erratic motion
3. because the storm was a shallow one
4. as figure 16 would strongly suggest

Col. 68 Mark all true statements:

1. Inga was the first hurricane of record to form in the Gulf of Mexico in November.
2. It is possible that more than 2000 people might have lost their lives in Hurricane Hattie were it not for the excellent advance warnings.
3. Except for no eye and no spiral bands Jenny was a truly tropical storm.
4. Hurricane Hattie was initially spotted by a weather satellite.

Col. 69 Of the two tropical storms of 1961 which did not reach hurricane intensity:

1. the first reached maximum intensity off Nantucket and was at that time a pronounced storm to high levels
2. the second did damage about the same as normally done by a typical wintertime northeaster
3. both were apparently rather shallow storms
4. neither showed any evidence of a second eye

Col. 70 Which of the following statements concerning Frances and/or Hattie is (are) true?

1. Both had reported pressures of less than 930 mb.
2. Both resulted in loss of life.
3. A favorable divergence pattern aloft was lacking when Frances was at a critical low-latitude position.
4. Both of the storms were intercepted by mountainous terrain in the subtropics.

Volume 21 JULY 1962 Number 6

CONTENTS

Editorial: Will It Promote Economic Growth?	102
Topigrams	103
Briefs From the CO Staff Conferences	104
Eleven AMOS IV Systems Ordered	105
New Assistant Secretary of Commerce	105
Bureau Establishes New Radar Laboratory	106
Eight Bureau Stations To Receive TIROS Mosaics	106
Pilot-to-Forecaster Test Will Expand	106
Dr. Oliver Wulf Honored by WPI	107
River Forecasters Meet at Augusta	107
Summer Student Employees	108-109
New MIC's	110
Length of Service Awards	110
Dr. Harry Wexler Dies	111
New State Climatologists	112
Obituaries	112
Hydrologists-in-Charge Meet	112
Meteorological Readings	113
Welcome to the Weather Bureau	114
Transfers	114
Retirements	115
Health Benefits Program	115

On the cover, a thunderstorm over Boston on May 24, 1962. Photograph by Philip Preston of the Boston Globe.

WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.

RETIREMENTS

Orville R. Foster

Orville R. Foster, a Meteorological Technician at the Weather Bureau Airport Station at Pueblo, Colorado, retired June 27. Except for one year at Denver, Mr. Foster served at the Pueblo station throughout his 32-year career. He has attended Pueblo Jr. College. Mr. Foster's address is 4711 Thatcher Avenue, Pueblo, Colorado.

A. Lauritz Larsen

A. Lauritz Larsen, a Meteorological Technician at the Weather Bureau Airport Station at North Platte, Nebraska, retired July 21 after serving the Bureau 32 years. Mr. Larsen has served at Lander, Wyoming, Salt Lake City, and Omaha. He has attended Nebraska State Teachers College at Kearney, Nebraska, and Pennsylvania State University. His address is 506 South Pine Street, North Platte, Nebraska.

Mary M. Peigh

Mary M. Peigh, a Personnel Clerk at the Central Office, retired June 19. After joining the Bureau in 1943, Mrs. Peigh worked in the Synoptic Reports and Forecasts Division until 1945 when she moved to the Personnel Division. She has studied at the Kalamazoo Conservatory of Music. Mrs. Peigh's address is 2607 Avena Street, Wheaton, Maryland.

Lucy A. Wade

Lucy A. Wade, a Librarian at the Central Office, retired June 19. Mrs. Wade has been with the Reference Library since joining the Bureau in 1956. A former teacher, Mrs. Wade worked in private industry and for the Smithsonian Institution before joining the Bureau. She has attended Concord College, Athens, West Virginia and New River State College, Montgomery, West Virginia. Mrs. Wade's address is 2329 Gaylord Drive, S.E., Washington 23, D.C.

Health Benefits Program

The Bureau of Retirement and Insurance has announced that eligible employees who have previously elected not to enroll in the Federal Employees Health Benefits Program, or if enrolled, to change from "self only" to "self and family" may do so this October.

The next "open season" during which employees may freely change their health benefits registration will not be held until Fall, 1963.

The premium rates of the Service Benefit Plan and the Indemnity Benefit plan, which together cover about 80 percent of the nearly 2 million employees enrolled in the program, will not be increased for the next contract year which begins November 1, 1962.

A few of the other 35 plans participating may increase their premium rates to maintain the proper balance between the cost of present benefits and premium rates. The Civil Service Commission noted, however, that the increases will probably be small.

Charles E. Hubbard

Charles E. Hubbard, General Procurement and Supply Supervisor at the Regional Administrative Office in Salt Lake City, retired July 6 after nearly 45 years with the Weather Bureau. Mr. Hubbard began his career at Ellendale, South Dakota, and served at North Hook and Seattle, Washington, before transferring to Salt Lake City. While at Ellendale, Mr. Hubbard attended State Normal Industrial College. His address is 1628 East 4500 South, Salt Lake City, Utah.

Charles Willig

Charles Willig, Photographer-Platemaker-Pressman at the National Weather Records Center at Asheville, retired May 25 after serving the Bureau 39 years. Mr. Willig entered Weather Bureau service in Buffalo, New York, in 1922, later went to Philadelphia, Albany, New York and Chattanooga before transferring to Asheville. His address is 37 Mount Vernon Circle, Asheville, North Carolina.

Wallace A. Bertrand

Wallace A. Bertrand, Meteorologist in Charge at Indianapolis, retired July 3 after 32 years with the Bureau. Born in Indianapolis, Mr. Bertrand began as an Observer there and served at Bellefonte, Pennsylvania, Detroit, Parkersburg, West Virginia, Sacramento, and New York before returning to Indianapolis as MIC in 1950. Mr. Bertrand has attended Butler University in Indianapolis and Sacramento Junior College. His address is 910 Southwood Drive, Indianapolis, Indiana.

Norman B. Foster

Norman B. Foster, Chief of the Atmospheric Radiation Section of the Physical Science Laboratory, retired July 23 after 25 years with the Bureau. A former university instructor, Mr. Foster took his first position with the Bureau at Asheville, North Carolina, and served at Jacksonville, Florida, before moving to the Central Office where he remained until his retirement. A World War I veteran, Mr. Foster received his A. B. degree from Cedarville College, Cedarville, Ohio, and his M. S. degree in physics from North Carolina State University. He did graduate work in physics at the University of Chicago. His address is 231 Lawrence Drive, Falls Church, Virginia.

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU
Volume 21 AUGUST 1962

TOPICS

LIBRARY
OCT 25 1962
WEATHER BUREAU

AMS Statement on Weather Modification

(The following statement was released by the American Meteorological Society on July 4, 1962, and is reprinted with the Society's permission.)

The prospect of controlling weather and climate has social and economic implications so far-reaching that it has been a subject of interest to laymen and scientists for many years. If disastrous windstorms and floods could be prevented, many lives would be saved and much misery avoided. If droughts, hailstorms, and lightning could be diverted, much economic benefit from the saving of crops and forest lands would accrue. Except for religious rites of primitive peoples and prayers of civilized man, the matter was little more than a topic of speculation until the last fifteen years.

Developments in recent years have suggested that limited control of weather and climate may be scientific possibilities. Among these developments are: (1) the demonstration that clouds can be modified artificially by seeding them with dry ice or silver iodide; and (2) the demonstration that physical laws governing atmospheric motions can be cast in mathematical form suitable for processing on high speed electronic computers, to predict the future state of the atmosphere.

The first of these developments was discussed in a Statement on Weather Modification, dated 10 May 1957. This statement pointed out that cloud seeding experiments have indicated that precipitation can be increased over local areas where specific conditions prevail (e.g., over some regions where forced lifting of air over mountains occurs), but that present knowledge of atmospheric processes offers no real hope for large scale changes of weather or climate by cloud seeding.

The second development, application of numerical methods of forecasting by means of high speed computers, together with use of model experiments in studying atmospheric processes, gives promise that it will some day become possible to predict with accuracy the short and long term effects of artificial interference with normal atmospheric processes. This ability to predict accurately what would happen in the absence of modification attempts, and what would happen if they are applied, is an essential prerequisite to any rational attempt at weather control.

While neither of these developments has answered the question whether or not man can control weather or modify climate, they are major steps in the chain of research results which have extended our capabilities for measuring and understanding the processes that produce weather and climate. Continuation of this research progress should lead to systematic unraveling of this formidable scientific problem.

The outcome, with respect to determining the practical and economic feasibility of weather control and climate modification, is likely to remain uncertain for some time to come. Balanced against these difficulties and uncertainties are two important considerations: (1) the tremendous economic and humanitarian advantages if a significant degree of control or modification turns out to be possible, and (2) the likely result that basic research studies required to answer this question will lead to improved accuracy in weather prediction and extension of the time period for which useful weather forecasts can be prepared. In short, the effort will almost certainly be justified by the results.

Two conclusions emerge from our analysis of this matter. The first is that the potential importance of the problem warrants a substantial effort of meteorological research, with a significant increase in the scientific manpower concerned with basic and applied research in the atmospheric sciences at the universities and in government and private research laboratories. The second is that the nature of the problem, its magnitude, and the possible consequences of success in achieving any significant mastery of the atmosphere, are compelling reasons for a cooperative international effort. In our view, this international character of the program should be established immediately, even though the outcome of man's attempt to control or modify his atmospheric environment is still in doubt.

We heartily endorse the resolution unanimously adopted in the United Nations on 20 December 1961 for a cooperative international effort to improve weather prediction and to explore the possibilities of weather control and climate modification. We pledge the resources of the American Meteorological Society in support of such international effort and urge that it be directed toward peaceful humanitarian purposes.

Topigrams

Washington, D.C.
August 1962

TIROS VI was successfully launched at 4:54 a.m. EDT September 18, 1962. NASA reported a near circular orbit with a perigee of 425 miles and an apogee of 442 miles. The satellite is inclined 58.3 degrees to the equator. First pictures were of Egypt, the Red Sea, Greece and Italy. The photos were described by the NWSC as "Just about the best ever." On October 1, TIROS photos will go out on photo-facsimile from the NMC.

TIROS V nephanalyses were transmitted to France via Telstar. On September 5, the American Cable and Radio Corporation in New York began sending a map of clouds seen by TIROS V over the continental United States and the Pacific Ocean. The signals were beamed to the Telstar satellite which transmitted them to France during its 525th pass. A second map was transmitted, showing predicted weather conditions over the continental United States at an altitude of about 20,000 feet. This type of map is used in planning high-altitude airplane flights. The transmissions were part of an experimental program that began on August 21. In previous tests, the map signals had been "looped" back to the United States directly from the satellite or from France or Goonhilly Downs, England, without being read out.

NASA has requested the Weather Bureau to provide surface and upper-air weather measurements at the Pearl River, Mississippi, Static Test Complex where the motors for the Saturn and Nova vehicles will be static tested. These measurements will serve as inputs to meteorological forecasts that will be critical in the "go, no-go" decision to test these motors. There are two principal problems--if meteorological conditions are unfavorable when the test is made (a) the "focusing" of the high-intensity, long-duration sounds may have disastrous effects on nearby structures and even structures many miles away and (b) in the event of an accident, spillage of toxic fuels may be hazardous to nearby plant and animal life.

Twenty automatic tape punching river gages with telemetering units have been delivered and will be installed at locations where there is a need for the tape record as well as the telemetered data. This equipment is compatible with the U.S. Geological Survey gaging equipment and negotiations are under way with the Survey which, it is hoped, will allow us to attach our telemetering unit to their recording gages in the future.

Official notice has been received from the Soviet Union regarding exchange of visits between the members of the Hydro-meteorological Service, USSR, and U.S. meteorologists. Plans are being coordinated with the Department of Commerce and other interested agencies.

Volunteer Observers Honored by Bureau For Outstanding Work

Thirty-one volunteer observers received the Bureau's 1962 Thomas Jefferson and John Campanius Holm Awards this August. Speaking of the volunteers, Dr. F.W.Reichelderfer said, "The information provided by these observers is of inestimable value to the nation."

The Thomas Jefferson and John Campanius Holm Awards were created by the Bureau in 1959 to honor outstanding achievement. The cooperative observer program has been in existence longer than the Weather Bureau itself, and many families of observers have been collecting weather data for generations. Most serve without pay, although a few of them receive small payments for special assignments.

Five received the Thomas Jefferson Award for unusual and outstanding accomplishments in the field of meteorological observations. This award is named for Jefferson because the statesman-scientist took an almost unbroken series of weather observations from 1776 to 1816. Thomas Jefferson winners are Edward C. Childs, Norfolk, Conn.; Charles C. Feagans, Washington, Ind.; Eugene N. Hastie, Perry, Iowa; J. E. Parker, Parker, N. C.; and Dr. Oliver I. Snapp, Fort Valley, Ga.

The John Campanius Holm certificate commemorates the first known systematic weather observer in the American Colonies. In 1644 and 1645 the Reverend Campanius made records of climate without use of instruments, near the present site of Wilmington, Delaware.

Winners are W. C. Barnard, Glennville, Ga.; Charles N. Brown, Ames, Iowa; Robert N. Clark, Lockport, N. Y.; Ned W. Colby, Ovando, Mont.; J. A. Dennis, Marshall, N. C.; Harry E. Ferguston, Hecla, Wyo.; W. S. Frame, Lakeside, Mo.; A. C. Hanson, Innwood, Iowa; Gertrude Harbison, Highlands, N. C.; D'Arcy Harding, Cambridge, Md.; Walter B. Harris, Coleman, Md.; Edwin E. James, Cascade, Mont.; R. H. Jennison, Healy, Kans.; A. E. Johns, Elgin, Nebr.; R. M. Jones, Clifton, Texas; Warren D. Judd, Fredonia, Ariz.; A. D. Lewis, Pacific, Mo.; Mr. and Mrs. John B. Mirmak, Wilkes-Barre, Pa.; H. A. Niemann, Lockwood, Mo.; Walter B. Ormsby, Sabino Canyon, Ariz.; Perry C. Quattlebaum, Conway, S. C.; Gilbert H. Reier, Warren, Pa.; Roger C. Rice, Los Banos, Calif.; Wm. E. Spearman, Chappells, S. C.; Wells P. Starley, Fillmore, Utah; and Alonzo M. Depue, Layton, N. J., who was given the award posthumously.

Long-Range Technical Studies Guided by Office of Planning

Since the establishment of the Office of Planning in late 1959 (see TOPICS, January 1961, page 9), a number of long-range plans covering specific technical problems have been completed.

Technical Planning Studies already published are: Number 1, Plan for Meeting Meteorological Observation Requirements Over Sparse Data Regions; Number 2, Prospectus of Meteorological Operations; Number 3, National Plan for a Common System of Meteorological Observation Satellites; Number 4, A Proposal for Terminal Forecasting Research Using Data from a Small-Scale Network; Number 5, Project ADAPT, a Weather Bureau Program in Atmospheric Dilution and Pollution Transport; and Number 6, The Use of Weather Surveillance Radar by the Weather Bureau.

Other studies are being prepared in the fields of marine meteorology, aviation weather, dissemination of public weather data, and field libraries. Panels are being organized to study small-scale observations and the requirements for urban meteorological measurements.

The Office of Planning, together with a special task force assigned to the project, has prepared a Common System Plan for the National Meteorological Service, 1962-1971. This plan outlines the nation's requirements for weather service during the next decade and the facilities needed to fulfill these requirements. Now in draft form, it is being coordinated with other government agencies concerned.

The Technical Planning Group, made up of representatives of each scientific and technical operating office and division and of the Budget and Management Division, prepared estimates for technical programs during fiscal years 1962 and 1963 and is now working on the 1964 budget estimates.

The Plans Review Board has reviewed and approved the 1962 and 1963 budget estimates and has endorsed the six Technical Planning Studies to the Chief of the Bureau.

Project Stormfury to Extend Hurricane Seeding Experiments

Project Stormfury, a joint Weather Bureau-Navy-National Science Foundation experiment aimed at finding whether man can systematically reduce the force of the hurricane, is scheduled to go into operation during the current hurricane season.

The Project is an extension of last year's experimental seeding of Hurricane Esther. (See TOPICS, November-December, 1961.) In that test silver iodide crystals were injected into the hurricane near the eye. The immediate result was the conversion of about 400 cubic miles of supersaturated water into ice, and a momentary reduction of 10% in the maximum winds at lower levels of the storm.

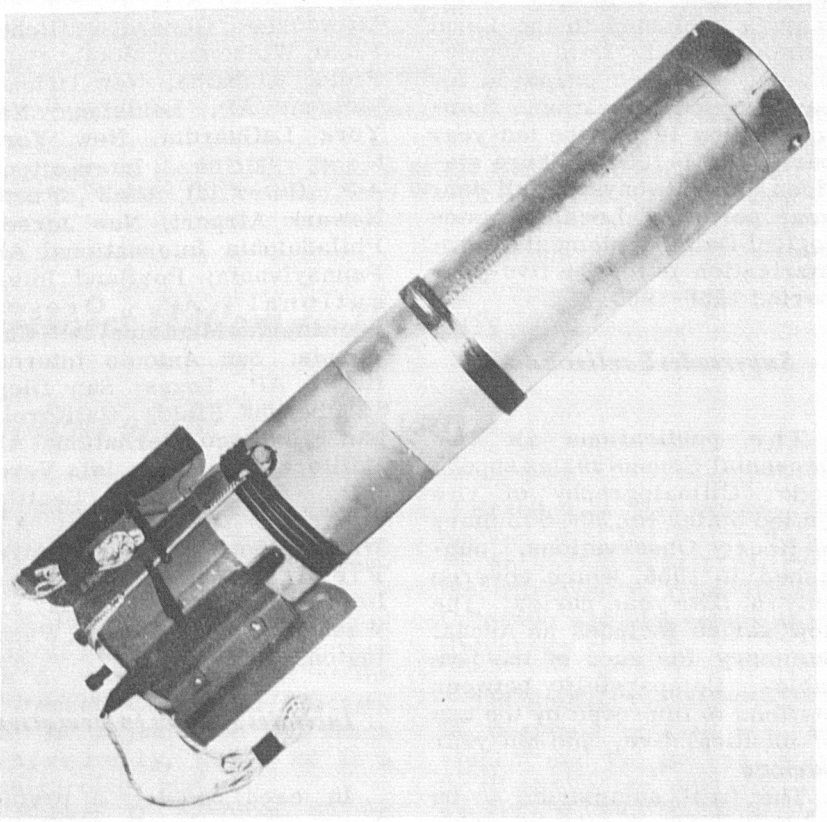
Project Stormfury will be headed by Dr. Robert H. Simpson, Deputy Director of Research (Severe Storm) for the Weather Bureau. Commander M. A. Eaton, Officer in Charge of the Navy's Fleet Weather Service, Miami, is Assistant Director. The staff of the National Hurricane Project in Miami will provide support in the development of scientific plans and in the evaluation of the results of the seeding.

When the Project is in operation, a total of 75 flight and scientific personnel will be aboard as the planes fly into the hurricane. Two DC-6's, a B-57 and a B-26 will be operated by the Bureau's Research Flight Facility. The Navy is providing two high-flying A3D jets, two WV3's and two FU8's. Stormfury aircraft will be controlled from the National Hurricane Center at Miami.

A new device for dispensing the silver iodide crystals, developed at the Naval Ordnance Test Station at China Lake, California, will be delivered to strategic locations in the Hurricane by the A3D's. The Bureau's aircraft will monitor the changes in the storm structure and in the forces which drive the winds of the storm before and after seeding.

The object of the experiment is to create instabilities in the hurricane wind system which will cause the ring of maximum winds near the eye to expand outward and, by doing so, diminish their intensity.

The results of last year's experiment are not conclusive since the wind reduction is a phenomenon which has been observed to occur naturally in hurricanes. However, if equivalent results are obtained from additional experiments, little question will remain that this approach can be effective in systematically reducing the destructive fury of the hurricane.



Above is the new device for dispensing silver iodide crystals developed at the Naval Ordnance Test Station at China Lake, California. U.S. Navy Photo.

Office of Climatology Publishes Decennial Census

Of Surface Data Gathered at Major Stations

Summaries of hourly surface weather data for 33 major airports, covering the period 1951 through 1960, have been completed at the National Weather Records Center and will soon be published as part of the Decennial Census of United States Climate, 1960. Summaries for about 70 additional airports are scheduled for publication later in the fiscal year. The general title for the entire series is "Climatography of the United States No. 82-."

A 16-page booklet, containing data based on monthly summaries published in the Local Climatological Data Supplements, has been prepared for each airport location. Summarization is for the ten-year period 1951-1960. Where stations do not have a full ten-year period of Local Climatological Data Supplements, summarization is for the five-year period 1956-1960.

Supercedes Earlier Edition

The publications in the Decennial Census series supersede "Climatography of the United States No. 30--Summary of Hourly Observations," published in 1956, which covered only a five-year period. The new series includes an Annual Summary for each of the five tables. Comparability between stations is improved by the use of identical five- and ten-year periods.

The first summaries to be published are for the following locations, selected on the basis of their important aviation requirements: Baltimore Friendship Airport, Maryland; Boston Logan AP, Massachusetts; Brownsville International AP, Texas; Buffalo Greater Buffalo AP, New York; Burbank Lockheed AP, California; Chicago Midway AP, Illinois; Cleveland Hopkins AP, Ohio; Dallas Love Field, Texas; Detroit City AP, Michigan; Honolulu International AP, Hawaii; Houston International AP, Texas; Jacksonville T.C. Imeson AP, Florida; Lake Charles Chennault Air Force Base, Louisiana; Los Angeles International AP, California; Memphis Municipal AP, Tennessee; Miami International Airport, Florida; Milwaukee General Mitchell Field, Wisconsin; Mobile Bates Field, Alabama; New Orleans Moisant AP, Louisiana; New York LaGuardia, New York; New York International AP (Idlewild), New York; Newark Airport, New Jersey; Philadelphia International AP, Pennsylvania; Portland International AP, Oregon; Sacramento Municipal AP, California; San Antonio International AP, Texas; San Diego Lindbergh Field, California; San Francisco International AP, California; San Juan Isla Verde AP, Puerto Rico; Seattle-Tacoma International AP, Washington; Spokane Geiger Field, Washington; Tampa International AP, Florida; and Washington National AP, Washington, D. C.

Includes Station Information

In each booklet, a preface page gives a brief explanation of the new ten-year series compared with the previous five-year summaries, which were prepared for 114 locations. Station location information, together with topography and detailed information on smoke sources, is also included on the preface page. In a number of instances, the pamphlets contain a map showing principal smoke sources in the vicinity of each airport site.

Data Tabulated

Tables presented in the ten-year summarizations are similar to Tables A through E in the Local Climatological Data Supplements, except that Tables B, D, and E give percentage frequency instead of total occurrences.

Table A contains total occurrences of temperature at five-degree intervals, versus four intervals of wind speed distributed over six divisions of relative humidity values. Table B includes percentage frequencies of wind direction and speed. Wind speeds in this series of publications will be in miles per hour.

Table C gives total occurrences of precipitation amounts for each hour of the day for intensities as follows: trace, .01 inch, .02 to .09 inch, .10 to .24 inch, .25 to .49 inch, .50 to .99 inch, 1.00 to 1.99 inches, and 2.00 inches and over.

Table D presents percentage frequencies of visibility in miles, versus ceiling heights in feet. Eight categories of visibility and nine divisions of ceiling heights are used. Table E gives percentage frequencies of sky cover, wind speed in miles per hour, and relative humidity values for each hour of the day.

The "Student of the Year" award winners in the VIDMET Studios at the Central Office. To the right are George Fisher, Lee Niemann, Robert C. Newman, and Walter A. Lyons. Photo by the Washington Post.

Dr. J. Herbert Holloman Presents New 'Student of the Year' Awards

Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology, presented "Student of the Year" awards to four Weather Bureau student trainees on August 30 at the Central Office.

The award, presented by the Bureau for the first time this year, is made to summer student trainees on the basis of exceptional accomplishment or performance. Each winner received a certificate and a cash award of $100.

The top students are George Fisher, 25, a research worker at DMO, Miami, and a senior at Florida State University where he is majoring in meteorology. His home is Homestead, Florida.

Walter A. Lyons, 19, of Floral Park, New York, worked as a research analyst at the Forecast Center in Chicago. He is a junior at St. Louis University, where he is a meteorology major.

Robert C. Newman, 21, of Arlington, Virginia, was a research worker with the Stratospheric Meteorological Research Project in Washington, D. C. Mr. Newman is a senior at Duke University, majoring in physics.

Brand Lee Niemann, 21, worked with the Water Supply Forecast Unit at Salt Lake City. Mr. Niemann is from Denver, Colorado and is a senior at the University of Utah.

The Student Trainee Program is designed to give both the student and the Bureau an opportunity to evaluate one another, and to encourage promising students to make meteorology a career. The students work during the summers at stations and offices across the country, getting practical experience and valuable training in meteorology.

Welcome to the Bureau

William J. Alder, Student Trainee, Long Beach, California
Richard W. Andrews, Student Trainee, Portland, Ore.
Richard A. Anthes, Student Trainee, Richmond
Bernard C. Augustine, Meteorological Technician, Barter Island
Travis L. Baker, Electronic Technician, Anchorage
David P. Barnes, Meteorologist, San Antonio
George Bellino, Meteorological Technician, Point Mugu
James J. Benn, III, Student Trainee, Sacramento
Raymond E. Biedinger, Meteorologist, Washington, D. C.
Tommy R. Biggs, Student Trainee, Fort Worth
Albert D. Bodine, Student Trainee, Waco, Texas
Nathan Bodnar, Student Trainee, Buffalo
Richard S. Bortoli, Repairman, Joliet
Albert J. Bressi, Card Punch Operator, Central Office
John M. Brown, Student Trainee, San Diego
James M. Burnett, Meteorological Technician, New Orleans
Charlotte Caldwell, Clerk-Stenographer, Anchorage
Robert L. Cannon, Mathematician, Central Office
Jimmie C. Clark, Photographer-Platemaker-Pressman, Asheville
Kenneth E. Comba, Student Trainee, Pittsburgh
Ronald G. Cornelison, Teletypist, Kansas City
Allaire F. Coughlin, Student Trainee, New York
Harold A. Creasman, Photographer-Platemaker-Pressman, Asheville
Robert K. Crowell, Administrative Assistant, Central Office
Russell L. DeSouza, Student Trainee, Providence, R. I.
John R. Dickson, Student Trainee, Port Arthur, Texas
Robert M. Donner, Student Trainee, Central Office
Leonard M. Druyan, Student Trainee, New York
Ernest E. Eberhardt, Student Trainee, Salt Lake City
Ronald N. Eckes, Meteorological Technician, Rapid City, S. D.
Jim Elliot, Digital Computer Systems Operator, Fort Worth
Gerald E. English, Meteorological Technician, International Falls, Minn.
Geraldine Engle, Clerk-Stenographer, Central Office
William H. Evans, Construction and Maintenance Representative, New York
James M. Fair, Meteorological Technician, McGrath, Alaska
Doris R. Fennell, Clerk-Typist, Kansas City
Carl W. Florman, Electronic Technician, Fort Huachuca
Cosmo D. Fornaro, Student Trainee, Albany, N. Y.
Robert W. Fraser, Special Assistant, Central Office
Herbert C. Freeland, Electronic Technician, Point Mugu
Carl W. Freeman, Meteorological Technician, San Francisco
Kenneth R. Glodo, Meteorological Technician, North Platte
Stephen G. Godwin, Meteorologist, New York
Joseph H. Golden, Student Trainee, San Diego
Margaret C. Gould, Meteorological Technician, Central Office
Abraham Greenberg, Meteorological Technician, New York
Wallace R. Hackling, Student Trainee, Binghamton, N. Y.
Wayne F. Hagan, Meteorological Technician, Des Moines
Virginia W. Hall, Clerk-Stenographer, Tifton, Ga.
William L. Hall, Photographic Aid, Asheville
Robert L. Halla, Student Trainee, Billings, Mont.
James R. Hammond, Meteorologist, Los Angeles
Charles H. Harley, Meteorological Technician, Goodland, Kansas
Charles A. Harper, Meteorological Technician, New Orleans
Christopher W. Harrison, Photographer-Platemaker-Pressman, Asheville
Harry S. Hassel, Student Trainee, Grand Island, Nebr.
Earl L. Heacock, Electronic Engineer, Central Office
Robert T. Healy, Meteorological Technician, Charleston, S. C.
G. Dale Hess, Student Trainee, Pittsburgh
Flora M. Hestand, Card Punch Operator, Kansas City
Thornton M. Hogabloom, Jr., Meteorological Technician, Denver
Robert M. Holley, Meteorologist, Central Office
Thomas L. Hollis, Meteorological Technician, Memphis
Arnold M. Hori, Student Trainee, San Francisco
Manley E. Hoyt, Meteorological Technician, Atlantic City
Thomas M. Hughes, Student Trainee, Hartford, Conn.
Ronald P. Hunt, Meteorological Technician, Louisville

Continued on page 126.

Transfers

	FROM	TO
Bruce M. Aikens	San Francisco	Resolute, NWT.
James R. Allen	Los Angeles	Phoenix
Dalphia C. Anderson	Chattanooga	Asheville
Fermin J. Aragon	Albuquerque	Point Arguello
Ronald G. Baldwin	Asheville	Cordova
Richard L. Barrett	San Francisco	Point Mugu
Walter J. Bartlett	San Francisco	Los Angeles
William H. Barth	Columbia, Mo.	Kansas City
Ernest E. Bays	Charleston, W. Va.	Amarillo
Fred A. Beeler	Fort Smith, Ark.	Little Rock
Roy R. Benning	Great Falls, Mont.	Fresno
David L. Bjorem	Portland, Ore.	Yakima, Wash.
Robert M. Black	Des Moines	Portland, Ore.
Thomas M. Blackburn	Richmond	San Juan
Bruce H. Blankenship	Cordova, Alaska	Cold Bay
Ernest E. Block	Barrow, Alaska	McGrath, Alaska
Raymond E. Bromley	St. Joseph, Mo.	Kansas City
Kenneth E. Bryan	Tulsa	Atlanta
Donald A. Burrows	Spokane	Yakima, Wash.
Claude E. Carpenter	Columbia, Mo.	Kansas City
Joseph J. Crubaugh	Kansas City	Denver
John T. Curran	Omaha	Kansas City
Francis H. Davis	Fort Huachuca	San Francisco
Norbert F. Delver	Kwajalein	Las Vegas
Roger Dickey	Sacramento	Los Angeles
Lucius D. Drewry	Charleston, S. C.	Athens, Ga.
Loren E. Fagan	Kotzebue, Alaska	Las Vegas
James C. Fankhauser	Chicago	Kansas City
Amet Figueroa	Anchorage	Annette, Alaska
Earl S. Gray	Chattanooga	Kansas City
Paul H. Hagerty	Omaha	Chicago
James K. Hall	Sacramento	Medford, Ore.
Leonard Hand	Central Office	Portageville, Mo.
Emma S. Hargett	Asheville	Central Office
John W. Hathorn, III	Port Arthur	Memphis
Robert L. Hazzard	Barter Island	Hartford, Conn.
Jack R. Hicks	Lake Charles	Jacksonville
Charles K. Hill	Memphis	Huntsville, Ala.
Howard D. Hobart	Seattle	Olympia
John R. Hope	Memphis	Miami
David C. Hughes	Amarillo	Sterling, Va.
Stanley B. Jazwinski	Chicago	Green Bay
Charles B. Johnson	Boise	San Francisco
Kenneth A. Kraus	Wilmington, N. C.	Newark
Jay I. Krieger	Central Office	New York
Robert Kuessner	Boston	Washington, D. C.
Perry M. Landgren	Everett, Wash.	El Paso
John F. Lohr	Lincoln, Nebr.	Omaha
James E. Lovill	Greensboro, N. C.	Tallahassee
Thomas Manning	Jacksonville	Apalachicola, Fla.
Joseph R. Martin	Nome	Anchorage
James L. McElroy	Great Falls, Mont.	Portland, Ore.
Kenneth J. McKinley	Kansas City	Chicago
Edward A. McNeely	Chattanooga	Memphis
Henry R. McQueen	Battle Creek	Atlanta
Emajon Meredith	El Paso	Waco
David Ronaldson	Cold Bay	Yakutat, Alaska
Daniel L. Sala	Rochester, N. Y.	Richmond
Winfield C. Schomp	Hartford, Conn.	Newark
Samuel L. Shaw	Phoenix	San Juan
Dawaine Shoemaker	Yakutat, Alaska	Kotzebue, Alaska
Charles A. Smith	New Orleans	Hartford, Conn.
David R. Smith	Waco	Cleveland
James B. Soileau	New Orleans	Seattle
Charles H. Swan	Green Bay	Madison, Wis.
Benny H. Terry	Oklahoma City	Little Rock
Richard C. Theis	San Francisco	Point Mugu
Robert A. Watanabe	Central Office	Koror
Walter L. Watts	Fort Worth	Norman
Donald E. Weddle	Little Rock	Cape Hatteras
Ronald R. White	New York	San Juan
Tracy A. Yamashiroya	Johnston Island	Honolulu
George A. Yount	San Juan	St. Louis

RETIREMENTS

Gilbert L. Prucha

Gilbert L. Prucha, a Meteorological Technician at San Diego, retired August 21 after 34 years of service to the Weather Bureau. Mr. Prucha's first duty station was Huron, South Dakota. He later served at Seattle, Juneau, Nome, and Reno, before being appointed to the San Diego office in 1946. He has attended the University of Nevada, Boyles Business College and the University of Tennessee. His address is 829 Santa Barbara Place, San Diego 8, California.

Richard T. Fox

Richard T. Fox, Meteorologist in Charge of the Weather Bureau Airport Station at International Falls, Minnesota, retired August 17, after nearly 35 years with the Bureau. Mr. Fox worked in private industry before joining the Bureau in Cleveland in 1927. He served at Louisville, El Paso, Waco, the Central Office and Cincinnati. He was appointed to International Falls in 1942 and became MIC there in 1952. He has attended the University of Cincinnati, the University of Louisville, the Department of Agriculture Graduate School, and the University of Minnesota. His address is Box 946, International Falls, Minnesota.

Regina Lane

Regina S. Lane, a Staff Assistant in the Budget and Management Division, retired August 17. She had been in Government service 19 years. Miss Lane joined the Bureau in 1946 and worked in the Station Operations Division and the Plans and Program Management Office prior to the creation of the Budget and Management Division. Miss Lane worked in private industry and for the Civil Aeronautics Administration, the Air Transport Command, the Veterans Administration, and the Rural Electrification Administration, and has attended Temple Business School. Miss Lane's address is 2122 Decatur Place, N. W. (Apt. 34), Washington, D. C.

Maurice F. Kleindienst

Maurice F. Kleindienst, a Letterpress Pressman at the Central Office, retired August 31, after 38 years of service. Mr. Kleindienst worked as a commercial printer before joining the Bureau in 1924. He has been at the Central Office throughout his Bureau career. His address is 4110 71st Ave., Landover Hills, Hyattsville, Maryland.

Thomas Haw

Thomas Haw, a Weather Data Editor at the Central Office, retired August 20 after 27 years of Government service. A World War I veteran, Mr. Haw worked in private industry and for the Department of Agriculture before joining the Bureau in 1939. He has been at the Central Office since then and has served in the Budget, Finance, and General Service Division, Administrative Services Division, and Forecasts and Synoptic Reports Division. His address is 1807 East-West Highway, West Hyattsville, Md.

Congressional Resolution On Harry Wexler

Upon learning of the death of Dr. Harry Wexler, Director of Research for the Weather Bureau, the House Committee on Interstate and Foreign Commerce, Rep. Oren Harris, Chairman, drafted the following resolution.

"It is with great sorrow that the Committee on Interstate and Foreign Commerce, of the House of Representatives, learns of the untimely death of Harry Wexler.

"For many years by reason of the official relationships of the committee and the Weather Bureau, the committee has been well aware of the tremendous contribution which Harry Wexler has made to the world's meteorological research, including his sponsorship of meteorological satellites and his working out of arrangements for international cooperation in their use. Indeed, no American has done more in the successful furthering of international understanding among scientists.

"But beyond this, the members of the committee through their participation in the International Geophysical Year and ensuing personal association with him as Chief Scientist for the Antarctic programs have had continuing occasion to appreciate his warm friendliness, imaginative leadership, stimulating scholarship, catholic knowledge, vibrant spirit, and confident faith.

"Accordingly, be it resolved by the Committee on Interstate and Foreign Commerce, in executive session assembled that its deep sympathy be expressed to his widow, Hannah, to his daughters, Susan and Libby, and to his associates.

"Unanimously approved, August 14, 1962."

Welcome,

Mitsuo Ikuma, Meteorological Technician, Oakland, Calif.
Thomas P. Incrocci, Student Trainee, Chicago
Robert E. Introne, Jr., Student Trainee, Boston
Carl E. Jablonowski, Student Trainee, Harrisburg, Pa.
Daryl R. Jameson, Meteorological Technician, Meacham, Ore.
Albert O. Johnson, Electronic Maintenance Technician, Concordia
Alfred I. Jones, Meteorologist, Pittsburgh
Stephen L. Kahn, Student Trainee, Chicago
Richard A. Kamm, Meteorological Technician, New Orleans
Robert G. Kammerman, Student Trainee, New York
Richard M. Kee, Electronic Engineer, Central Office
Patrick L. Keeney, Meteorologist, Asheville
Neil D. Kelley, Student Trainee, St. Louis
Virginia L. Kellum, Mail and File Clerk, Fort Worth
Jerry M. Kennedy, Mathematician, Central Office
Thomas E. Keough, Meteorologist, San Francisco
William E. Ketola, Meteorological Technician, Des Moines
Floyd M. Keyes, Electronic Technician, Mauna Loa, Hawaii
Bernard L. Killion, Meteorological Technician, Las Vegas
David G. King, Meteorologist, Midland, Texas
Ronald L. King, Meteorological Technician, Central Office
James A. Kirby, Jr., Warehouseman, Asheville
John C. Kitteringham, Meteorological Technician, San Antonio
Donald A. Kluckman, Meteorological Technician, Cold Bay
William Knight, Messenger, Central Office
Donald F. Kostecki, Student Trainee, St. Louis
Frank M. Kowalski, Electronic Maintenance Technician, Evansville
Robert Kuessner, Meteorologist, Boston
Robert N. Lacey, Meteorological Technician, Atlanta
Malcolm S. Lacy, Meteorological Technician, Oklahoma City
Ethel F. LaGalle, Clerk-Typist, Kansas City
Harold D. Lee, Student Trainee, Honolulu
James G. Lee, Meteorological Technician, Sault Ste, Marie
Louis E. LeMaster, Meteorological Technician, Tatoosh Island
Joseph R. Levine, Meteorologist, Richmond, Va.
Annie Louise Lewis, Clerk-Stenographer, Central Office
William W. Lipscomb, Student Trainee, Denver
Roland G. Loffredo, Meteorologist, New York
Tommy D. Lott, Meteorological Technician, Norfolk
Wesley D. Luhn, III, Student Trainee, Charleston, S. C.
Judith K. Lynch, Clerk-Stenographer, Kansas City
Derrel R. Martin, Meteorological Technician, Central Office
Robert J. Massey, Student Trainee, Sacramento
Franklin D. Mastin, Meteorological Technician, Phoenix
George E. McBride, Student Trainee, Midland, Texas
John McCarthy, Student Trainee, New Orleans
Kenneth J. McKinley, Meteorological Technician, Chicago
Melvin R. McLaughlin, Student Trainee, Austin
Bruce R. Meland, Meteorological Technician, Anchorage
Leslie D. Melton, Meteorological Technician, Fort Huachuca
Gerald H. Meral, Student Trainee, Detroit
Jack M. Mercer, Jr., Student Trainee, Portland, Ore.
Julia E. Merrill, Editorial Clerk, Kansas City
Lewis H. Nagler, Jr., Student Trainee, Baltimore
Norris A. Nielsen, Student Trainee, Washington, D. C.
Brand L. Niemann, Student Trainee, Salt Lake City
John F. Townsend, III, Student Trainee, Washington, D. C.
Dorothy L. Tucker, Voucher Examiner, Anchorage
Robert Valitski, Student Trainee, Boston
Joan C. Vyverberg, Student Trainee, New York
Samuel A. Wax, Mathematician, Central Office
Herbert Weigl, Jr., Student Trainee, San Antonio
Kenneth A. Wigner, Student Trainee, San Francisco
Ned H. Williams, Electronic Maintenance Technician, New Orleans
Richard F. Williams, Student Trainee, Columbia, S. C.
Freestone F. Wilson, Student Trainee, Jacksonville, Fla.
Robert A. Wolf, Mathematician, Central Office
Ronald L. Wooten, Meteorological Technician, Fairbanks
James E. Wydick, Laboratory General Mechanic, Central Office
Peter P. Zwack, Student Trainee, New York

Length of Service Awards

35-Year Awards

John H. Aldrich
WBAS, Los Angeles
Ivan E. Anderson
WBO, Eureka
Aubrey D. Husted
WBAS, Norfolk
Wilbur F. Lange
WBAS, New York
Bernard N. White
WBO, Lancaster, Pa.

30-Year Awards

Mark W. Ellett
WBAS, Atlanta
Clynt E. Sitchler
WBAS, Abilene
Robert C. Walker
WBAS, Pittsburgh

25-Year Awards

Ivan W. Brunk
WBO, Chicago
Lyle B. Callahan
WBAS, Columbia, S. C.
Edward J. Clancy
WBAS, Atlanta
James S. Collier
WBAS, Buffalo
Edward V. Copeland
WBAS, Miami
Annabelle F. Renick
WBO, San Francisco
William M. Rowe
WBAS, Memphis
Lester M. Van Dusen
WBAS, Great Falls
Edward O. Zeien
WBAS, Rapid City
William E. Zimmermann
WBAS, Albuquerque

20-Year Awards

Edward L. Banken
WBAS, Honolulu
Earl M. Bates
WBAS, Portland, Ore.
Walter E. Benkman
WBAS, San Francisco
Wayne R. Brown
WBAS, Tampa
Marvin W. Burley
University of Wisconsin
Everett W. Carlson
WBAS, Nashville
Henry W. Chidley
WBAS, Denver
Donald V. Dunlap
WBAS, Trenton
Clarence Garrison, Jr.
WBAS, Fresno
Leonard R. Gilbert, Jr.
WBAS, Columbus, Ga.
E. Vernon Hendrickson
WBAS, Fargo, N. D.
Robert M. Hobson
WBAS, Macon
Robert C. Holt
WBAS, Eugene, Ore.
B. L. Johnson
PSO, Honolulu
Edgar G. Johnson
WBAS, Sea-Tac, Seattle
Howard A. Kappes
WBAS, Boise
Raleigh A. Marshall
WBAS, Norfolk
Percy J. Mattson
WBAS, Great Falls
Clarence L. Mitchell, Jr.
RAO, Ft. Worth
R. Bruce Morrow
WBAS, Tucson
Oscar E. Nichols
WBAS, Los Angeles
George B. Overgard
WBAS, Denver
David L. Powel
WBAS, San Francisco
Franklin F. Price
WBAS, Sea-Tac, Seattle
Hugh E. Pritchard, Jr.
WBAS, Chattanooga
Joseph H. Richter
WBAS, Charleston, W. Va.
Oscar R. Rudder
WBO, Sandberg
Lowell R. Semans
WBO, Cincinnati
Edwin R. Shelton, Jr.
WBAS, Hilo, Hawaii
M. Harold Smith
WBAS, Chattanooga
Harry Temple
WBAS, Albany, N. Y.
Billy D. Thomas
WBAS, Brownsville
Ola D. White
WBAS, Harrisburg
S. Lamar Woodward, Jr.
WBAS, Jackson, Miss.

15-Year Awards

Virginia T. Avery
WBAS, Miami
Wesley H. Bradford, Jr.
WBO, Yap, T. T.
Edward M. Crume, Jr.
WBAS, North Platte
Robert G. James
WBAS, Wichita Falls
Edwin Little
WBAS, Jackson, Miss.
Marietta C. Mahurin
WBAS, Fort Worth
Woodrow R. McKee
WBAS, North Platte
Henry F. Meyer
WBAS, Los Angeles
Charles J. Neumann
WBAS, Miami
Harry R. Spohn
WBAS, Des Moines

Annual Commerce Photography Contest Welcomes Bureau Employees' Entries

The annual Department of Commerce photographic contest will be held in the lobby of the Commerce Building from November 26 to December 7. All Commerce employees are eligible to enter photographs in the competition.

The Weather Bureau representative is Bernard Rochlin of the Forecasts and Synoptic Reports Division at the Central Office. Entries must be submitted to him prior to November 17. Samuel Dean Green, an Inspector at the Salt Lake City RAO, won the Department's best-in-show trophy last year. His winning photo, a desert landscape, appeared on the cover of TOPICS, January, 1962.

The contest rules are as follows:

Size of the photographs. No photograph smaller than 8 x 10 will be hung--none larger than 16 x 20. Photographs can be mounted with up to a 16 x 20 white card background.

Categories. Animal; action; landscape; portrait; still life; children; miscellaneous.

Number of entries. Each entrant is permitted three photographs in each category in black and white, and three photographs in each category in color.

Prizes. First, Second, and Third Prize ribbons for each category in black and white and color, plus a First, Second, and Third Prize trophy for black and white and color for the six most outstanding photographs in the show.

Identification of the photographs. No name will be allowed on the face of any photograph. Only the title is permissible. Any photos received with the photographer's name on the front will automatically be rejected. The following information should be submitted on the back of all photographs: name of the entrant; bureau in which he is employed; building and room number; telephone number; and title of the photograph. This information should be printed in the upper left-hand corner of the back of the photograph or mount.

Releases are necessary from any individual who is recognizable and whose pose might be considered uncomplimentary. A release is required from the model for a nude photograph if the model's face is recognizable.

Since space will be at a premium, photographs will be hung on a first-come, first-served basis. Entries should be submitted as early as possible. When the maximum number of 600 entries is received, no more can be accepted.

DEATHS

Roscoe Nunn

Roscoe Nunn, Meteorologist in Charge at St. Louis from 1929 until his retirement in 1938, died in St. Louis July 10. A veteran of 46 years' Government service, Mr. Nunn entered the Weather Bureau in 1891 and served at Nashville, Baltimore, St. Louis, and Denver.

Laurence C. Fisher

Lawrence C. Fisher, retired Meteorologist in Charge at Seattle, died July 21 at Seattle. Mr. Fisher joined the Bureau in New Orleans in 1902. He later served at Denver and Portland, Oregon. He was MIC at Seattle from 1934 until his retirement in 1946.

NMC Charting Specialist Wins Largest Award For Remarkable Suggestion

Lawrence W. Regelin, a Charting Specialist at the National Meteorological Center, has won a $300 suggestion award, the largest given since the Bureau's suggestion program was instituted.

Mr. Regelin's idea enabled the NMC to do away with a complex method of storing teletypewriter tapes. Before his suggestion was adopted, the tape emerging from seven teletypewriters was collected on takeup reels. Each reel was then fed through an IBM-1401-1011 combination to convert the paper tape to magnetic tape.

Mr. Regelin suggested that the paper tape could be run into and out of a battery of wastebaskets. By eliminating the need for renting takeup reels and reducing the time spent in loading the computer, the improved technique has resulted in savings of more than $16,000 a year.

New FOSDIC Filmer Helps Save NWRC Space

Through the use of the FOSDIC Filmer #2, put into operation last summer, the National Weather Records Center in Asheville has disposed of 105 million punched cards, representing approximately 8,000 square feet of storage space. Although this number represents only 25 percent of the cards in storage at the NWRC, and new cards accumulate at the rate of about 35 million per year, the rate of disposal is expected to increase over the next year or two, enabling the NWRC to eliminate the backlog of card filming within a reasonable time.

Volume 21 AUGUST 1962 Number 7

CONTENTS

AMS Statement on Weather Modification	118
Topigrams	119
Volunteers Honored by Bureau	120
Office of Planning Technical Studies	120
Project Stormfury	121
Decennial Census of Climatological Data	122
New "Student of the Year" Awards Given	123
Welcome to the Weather Bureau	124
Transfers	124
Congressional Resolution on Harry Wexler	125
Retirements	125
Length of Service Awards	126
Annual Commerce Photography Contest	127
Largest Suggestion Award	127
Obituaries	127
New Fosdic Filmer at NWRC	127

On the cover Powerful hurricane winds pile up the waters of Biscayne Bay on Miami's North Bayshore retaining wall. Miami Daily News photo from the American Red Cross.

WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.

LIBRARY
DEC 28 1962
WEATHER BUREAU

Holiday Greetings
and
Best wishes for 1963
F. W. Reichelderfer

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

TOPICS

SEPTEMBER - DECEMBER 1962

Editorial

'Into the Future'

The Year NINETEEN SIXTY-TWO has been a year of planning for research and service programs in atmospheric sciences on a GRAND SCALE, not only on a national basis but more importantly on an international, worldwide basis. Hopefully, meteorologists will see during the coming year many of these programs started on the way to reality. NINETEEN SIXTY-THREE should be a year of development and growth! The shape of things to come may be visualized by viewing in retrospect some of the events of the past year.

In January the Secretary-General of the World Meteorological Organization, acting on the Resolution adopted by the General Assembly of the United Nations on 20 December 1961, invited Bugaev of the U.S.S.R. and Wexler of the U.S.A. to serve as consultants in preparing a preliminary general plan for advancing the knowledge of atmospheric sciences and developing its technologies for weather forecasting and other applied services. The WMO First Report on the Advancement of Atmospheric Sciences and Their Application in the Light of Developments in Outer Space was issued in June 1962. Its proposals pertained mostly to extension of the network of synoptic weather stations, especially the upper air sounding network at sea, and to utilization of data from meteorological satellites, leaving for further study by WMO and other cooperating organizations representative of the scientific community the more difficult planning for research programs and the related problems of attracting and training a larger number of geophysicists including atmospheric scientists to carry on research.

In May 1962, a Committee on International Planning in Atmospheric Sciences and Hydrology (CIPASH) was appointed by the President of the National Academy of Sciences on request of the Special Assistant to the President (U.S.) for Science and Technology. During the summer and early autumn the panels with many representatives from the several related scientific disciplines worked intensively on preliminary research recommendations. The final report of these recommendations is expected in January, 1963. Meantime, the National Academy published in June its three-volume treatise on "The Atmospheric Sciences--1961-1971" giving the goals and plans as well as summaries of planning conferences developed during August and September, 1961, with suggested guidelines for research and development in aeronomy and meteorology in the United States. In May 1962, the Weather Bureau, after a two-year planning study, issued its "Common System Plan for the National Meteorological Service, 1961 - 1971," usually called the "Decade Plan" for use in projecting forward each year the annual programs and estimates.

Elsewhere in this number of TOPICS, there are remarks on international cooperation in meteorology and particularly in developing the capabilities of space satellites like TIROS, Nimbus, and their more advanced successors in the future. For meteorological research, the laboratory must in the nature of things usually be the atmosphere itself. Research data must usually come from observations in the free air. In studies of the general circulation and large-scale motions, representative data from the whole atmosphere are needed. For the first time, the new methods of probing the atmosphere--rockets, satellites, etc., in addition to radiosondes--give promise of providing adequate data. These, together with electronic computers and advanced methods for analysis and prediction by numerical process, offer the approach to more exact techniques in meteorology. They also bring with them even stronger reasons for international cooperation, an outlook sponsored by meteorologists for more than a century. As given in other items in this issue, satellites and computers developed along the guidelines of recent plans would provide reasons for closer cooperation and very worthwhile achievements in meteorology in the coming years.

F.W.R.

Nations Reach Agreement on Cooperation

In the Field of Meteorological Satellites

On December 5, at a meeting of the United Nations General Assembly's Political Committee, Ambassador Adlai Stevenson announced that, "In the field of meteorology, it is important that the two satellite launching nations contribute their capabilities toward the establishment of a global weather satellite system for the benefit of other nations."

Under an agreement, the United States and the U.S.S.R. will coordinate weather satellite launchings to ensure optimum coverage. They will exchange data received from the satellites and share information on sensing elements.

A joint working group will be established soon to arrange for the necessary communication links and prepare for the two-way exchange of data.

The "Summary of Understandings" outlines the following program for cooperation in Meteorology:

"It is agreed that this program falls naturally into two stages, an experimental and an operational stage.

"The first stage will extend approximately from the present time through 1963-64 during the development of experimental weather satellites by both the USSR and the U.S.

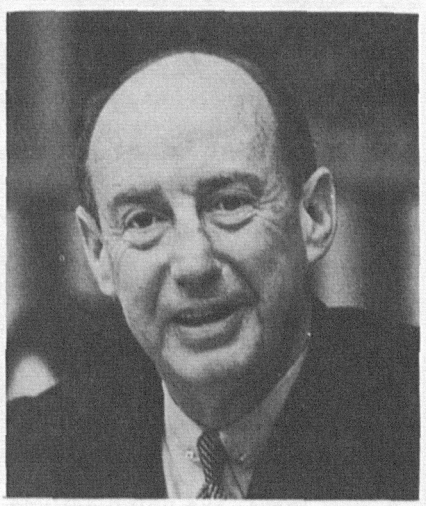
"In this first stage, the two countries will arrange for the establishment of communication links adequate for the transfer, from each to the other, of the data gathered by each nation from its own experimental meteorological satellites. These communication links would connect the World Weather Centers at Moscow and Washington. A Joint Working Group of technical experts will ...decide upon suitable communication links to be established with due regard to the sharing of costs and the interests of other nations.

"The Joint Working Group will also establish the criteria for the two-way transfer of satellite data over such links, with the understanding that such transfers will include selected cloud-cover pictures, especially related to storms, vortices, fronts, and the generation of these phenomena, with geographical coordinates provided for all pictures selected, together with nephanalyses based upon the data as a whole. The Joint Working Group will agree upon a date for initiating the two-way transfer of such data designating this date with due regard for the readiness of the communication links and the readiness of the USSR and the U.S. to provide data of approximately equivalent interest. Data should be exchanged as quickly as possible. The same communication links would be used to exchange weather charts, diagrams, vertical cross-sections, and the material required for solving the problems of world weather, including the extension of prediction periods. Coordinated research efforts should be directed toward these goals.

"The second stage of the meteorological satellite program will begin approximately in 1964-65 and will apply to the coordinated launchings by the two nations of a system of operational weather satellites. In order to prepare adequately and in a timely fashion for such coordinated launchings, a second Joint Working Group will meet in March 1963 to determine mutually agreeable launching schedules for the operational satellites, the numbers of such satellites, their orbits, and the comparability (to the degree desirable) of the characteristics of their sensors and the data to be obtained.

"These discussions as to satellite characteristics, numbers, and orbits shall be made with due consideration of recommendations of the World Meteorological Organization (WMO) with regard to the objectives of weather-data acquisition by satellites for both operations and research.

"The two-way transfer of data during the second stage shall be determined by the two nations and shall be made on a real-time basis. This transfer and the wider dissemination of such data to other nations will proceed with full consideration of the recommendations and procedures of the World Meteorological Organization (WMO). Nephanalyses, pictures of cloud cover, and processed data on radiation fluxes will be exchanged mutually."



Ambassador Adlai E. Stevenson

Round the Clock Broadcasts of Maps Beamed at Nations Around the World

On October 2, the Weather Bureau began continuous, round-the-clock radiofacsimile broadcasts of weather maps to Europe, South America, the Caribbean, parts of Central America, and the Far East.

Every 24 hours, 124 maps--including analyses of TIROS photographs and weather charts used in briefing high-altitude flights--are transmitted from both San Francisco and New York. The maps are selected for their value to forecasters in the nations where the broadcasts can be received. In line with this policy, additional twice-daily broadcasts will be beamed at Melbourne, Australia, during the periods when a TIROS satellite is photographing over the southwest Pacific.

Weather maps are broadcast to South America by the American Cable and Radio Corporation's transmitter at Brentwood, Long Island. Press Wireless, Inc., at Centereach, Long Island, transmits maps to Europe. From San Francisco, RCA Communications, Inc., broadcasts continuously to the Far East and provides part-time service to the southwest Pacific.

Under Test Since April

The feasibility of these radiofacsimile transmissions was tested in an experimental program conducted from April 15 to June 30. During the tests, reception was good in such widely separated areas as Argentina, Australia, England, Hawaii, Switzerland, and Scandinavia.

The response of foreign weather services was enthusiastic, and many expressed the hope that the program would be made permanent. TIROS cloud maps were especially welcomed, because they eliminated the need for deciphering the coded cloud analyses regularly disseminated on international radioteletypewriter networks.

New Satellite Equipment May Be Tested in 1963

A system for sending local cloud cover pictures to relatively simple ground receiving stations may be flight-tested on a TIROS satellite in mid-1963. The Automatic Picture Transmission Subsystem, called "APT," is being developed for operational use in Nimbus satellites.

Plans for the experiment were made public on December 3 by Senator Albert Gore in an address to the Political Committee of the United Nations General Assembly.

When it is perfected, the APT subsystem will enable meteorologists to obtain a few immediate local cloud pattern photographs of high quality while the satellite is within a 1700-mile range of a receiving station.

The equipment on the satellite will include a vidicon camera system and a transmitter. The camera will take pictures of about 800 miles on a side, at approximately 208-second intervals and at a frequency which will permit some overlap in the photographs. A mid-latitude station can expect to receive some four to seven pictures per day from two or three orbits passing near it. Each picture will be transmitted over a period of about 200 seconds and will be displayed on a facsimile recorder.

The Bureau and other interested agencies will install a limited number of experimental ground stations for test purposes. Further information will be published when the plans become definite.

Equal Employment Opportunity Program

(In accordance with Department of Commerce Administrative Order No. 202-21, Section 5.03 (3), TOPICS annually publishes information concerning the Department's non-discrimination policy and procedures.)

Employment Practices

It is the policy of the Weather Bureau that all appointments, promotions, or other personnel actions that affect an employee's status, shall be made solely on the basis of merit and qualifications, except as otherwise provided by law or regulation. No discrimination in any form, including failure to effect personnel actions, shall be exercised because of race, color, religion, or national origin. It is the responsibility of every official, supervisor, and employee of the Weather Bureau to make this policy effective.

Employment Policy Complaints

Any Weather Bureau employee who feels that an unfavorable personnel action has been taken by the Weather Bureau because of race, color, religion, or national origin, may submit a complaint to the Deputy Employment Policy Officer or the appropriate Regional Employment Policy Officer, the Employment Policy Officer for the Department of Commerce, or the President's Committee on Government Policy.

Any employee contemplating the filing of a complaint is urged to seek informal adjust-

Continued on page 138

New Circulation Lab Dedicated in Washington

The new facilities of the Bureau's General Circulation Research Laboratory were dedicated in Washington, D. C. November 7. In addition to being housed in new quarters, the Laboratory is now equipped with a powerful IBM STRETCH computer.

The Laboratory, in operation since 1955, has, in the IBM STRETCH, a research tool with capacity to handle the 10 million computations required to model weather changes over a 24 hour period at 10,000 points on the globe at 10 different levels in an effort to create a mathematical model of the atmosphere. The ability to approximate or simulate atmospheric behavior will enable research meteorologists to work on problems of longer-range forecasts and theories relating to weather modification.

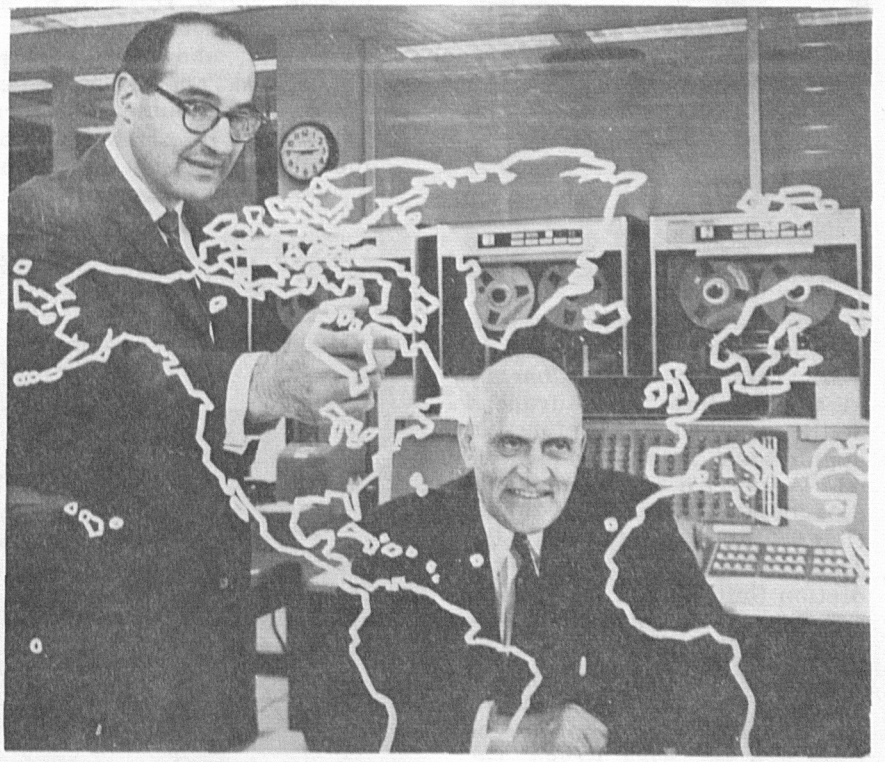
Dr. Joseph Smagorinsky, Chief of the GCRL, and his staff of meteorologists, oceanographers, mathematicians, programers, and computer operators combine talents and knowledge to transform known physical laws into mathematical formulas for assimilation in the computer. Research in how the earth absorbs and transmits radiant energy, in how the clouds of thunderstorms are formed, and in the effects of large mountain masses and of irregular distribution of land and water is necessary in obtaining data to recreate global weather.

The physical laws are expressed in differential equations which are programed as instructions. The computer solves the mathematical formulas and calculates the movements of the atmosphere over a series of time intervals or "time steps." That is, upon obtaining the forecast over the first time interval, this result is then used to proceed to the next, and so on. For purposes of calculating, the earth is divided into rectangular grids, and the equations must be solved at every point on the grid for every time step.

The hypothetical model of the atmosphere is not considered to be correct unless it realistically simulates possible atmospheric behavior over extended periods of time.

The testing of a model atmosphere may take several years. If its results show weather that has never been observed, the scientists must painstakingly search for errors in their calculations or in their theory.

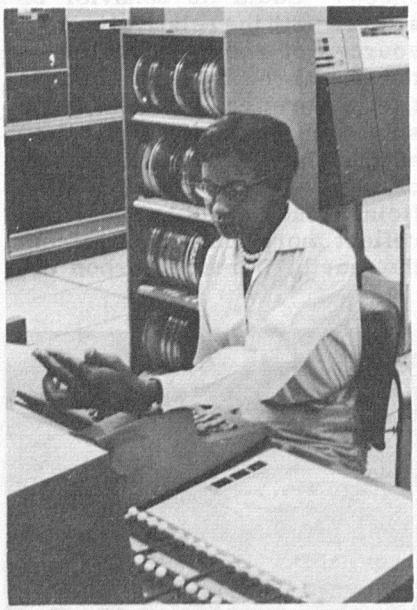
When theoretical models are able to reproduce natural phenomena faithfully enough to be useful in prediction, the next logical step is to investigate weather modification, inadvertent as well as intentional. Where and how is the atmosphere sensitive to external influences? Could its behavior be altered with the relatively small sources of energy available to man? Through simulation in the theoretical models, the scientists will learn what would happen to world weather and climate if, for example, artificial clouds could be created to reflect more sunlight away from the earth; if more carbon di-



Dr. Reichelderfer (right) discusses the work of the General Circulation Research Laboratory with Dr. Smagorinsky.

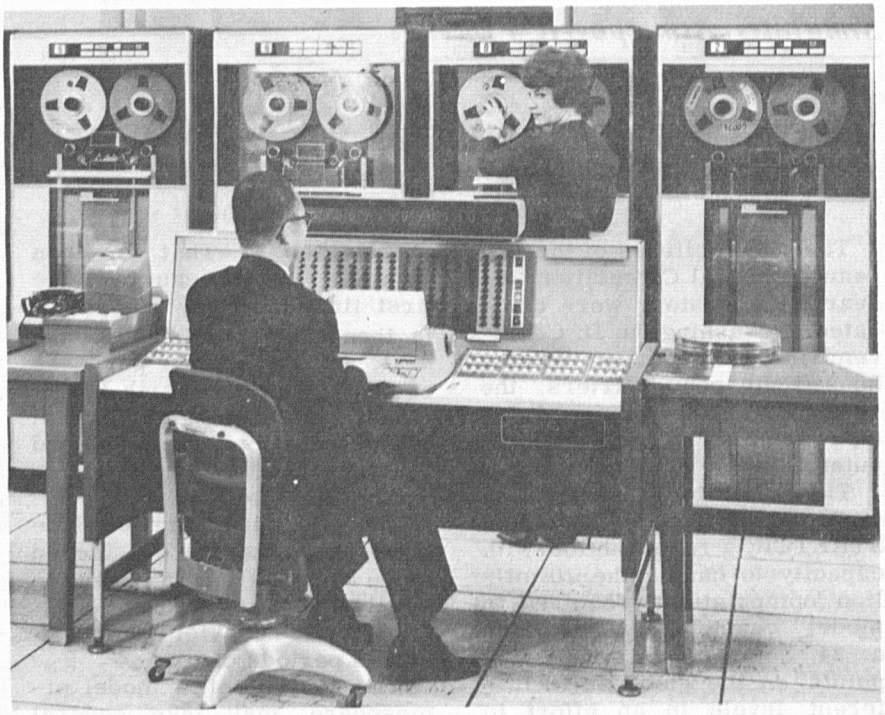
oxide were released to the atmosphere; if more forests were converted to agricultural land or cities; or if artificial black ground cover could be introduced over large areas such as the Arctic ice pack.

Dr. Smagorinsky has directed the GCRL since its establishment in October, 1955. A native of New York City, Dr. Smagorinsky received his B.S., M. S., and Ph. D. degrees in meteorology from New York University. He served as a weather officer in the U. S. Army Air Force during World War II. Since 1948, he has been with the Weather Bureau,



except for two years leave of absence from 1950 to 1952 to work with Dr. J. G. Charney at the Institute for Advanced Study in Princeton. Before his appointment as head of general circulation research, Dr. Smagorinsky was Chief of the Computation Section of the Joint Numerical Weather Prediction Unit.

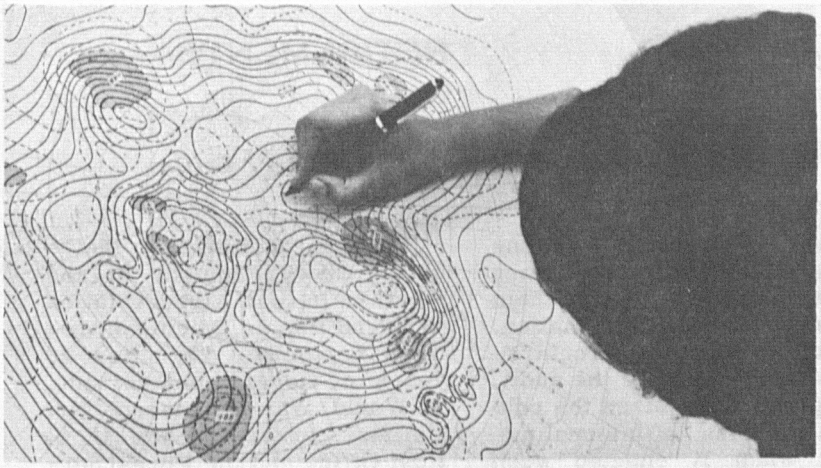
Roderick D. Graham is Assistant to the Chief of the Laboratory for Administration and Technical Facilities. Among the Laboratory's senior scientists are Dr. Kirk Bryan, Dr. Douglas K. Lilly, and Dr. Syukuro Manabe.

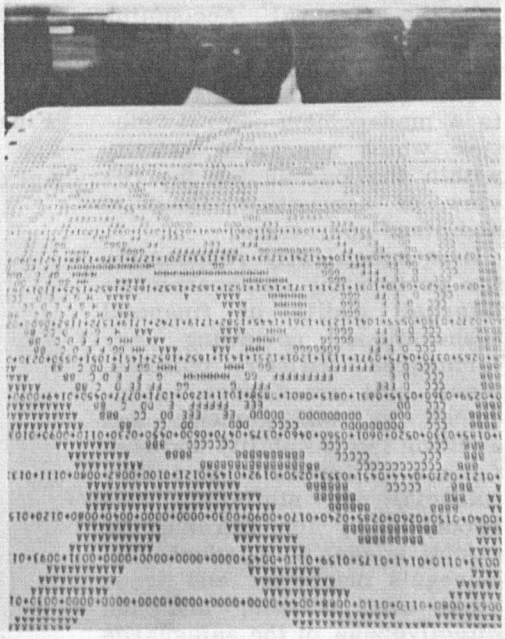


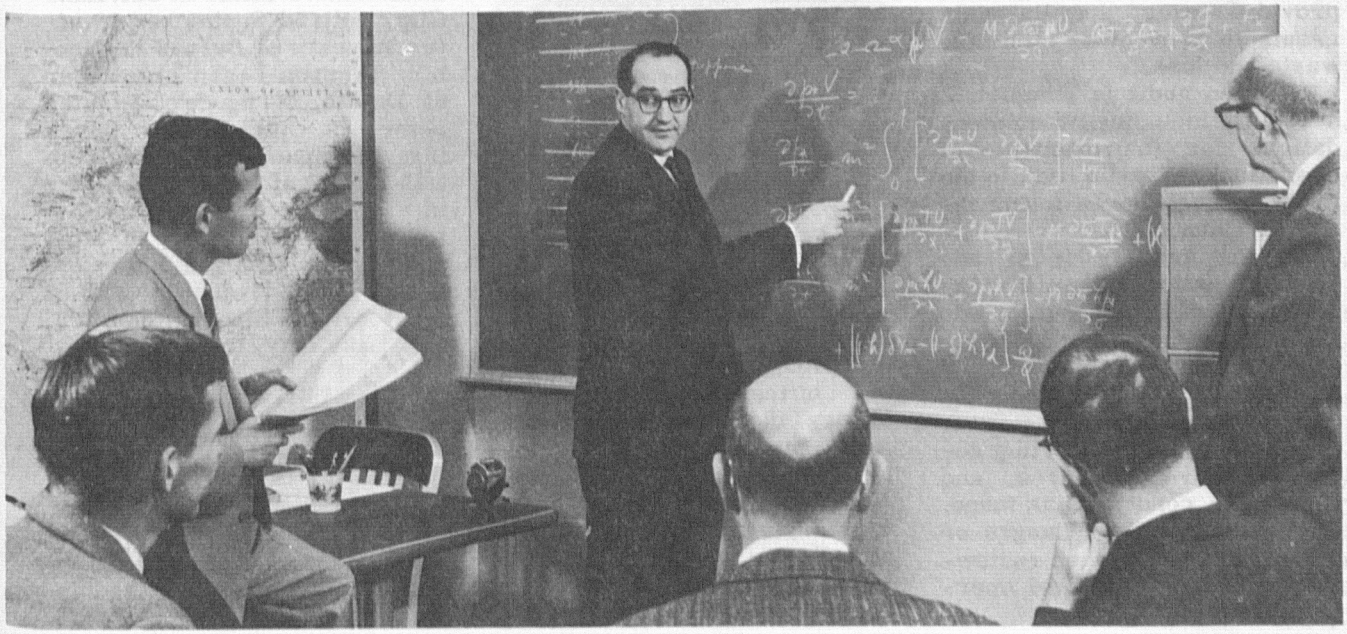
Some views of the staff and new facilities of the General Circulation Research Laboratory:

At left, the main operator's console of the STRETCH computer; above, the computer operator requests a tape change; below, some GCRL staff members.

Page 135, above, four steps in testing a model atmosphere are analyzing basic weather data, transferring it to punch cards, preparing a program, and studying the computer printout; below, Dr. Smagorinsky and staff members discuss the formulation of basic equations for a model atmosphere.







New Internal Audit Unit Created at Central Office

A new unit, the Office of Internal Audit, has been established at the Central Office. Responsible to the Office of the Deputy Chief, the new office's function is to assist management in improving operations.

Bryan W. Mercer, formerly with the General Accounting Office, Washington, D. C., has been named Chief of the Office.

The Office of Internal Audit is a management control function which appraises activity within the Bureau for the review of accounting, financial and other operations.

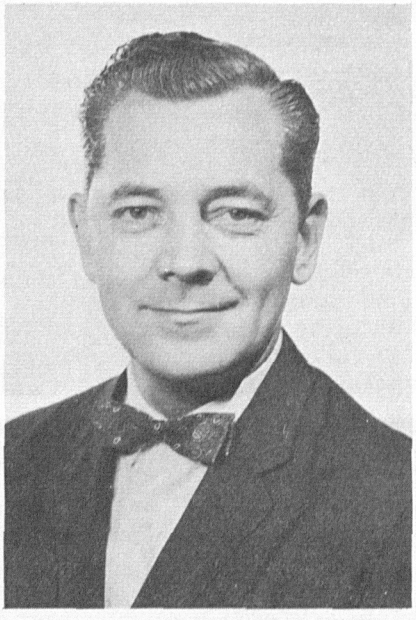
It is specifically responsible for performing comprehensive internal audits of financial transactions; reviewing performances under policies, plans, and procedures established by management; and auditing the reliability and usefulness of accounting and other financial and statistical data produced by the Bureau, the effectiveness with which the Bureau's manpower and property are utilized, and the effectiveness of the safeguards provided over the Bureau's assets to prevent or minimize waste and loss.

When an audit is completed, a report, including recommendations for improvements of operations, is submitted to the Chief through the Office of the Deputy Chief.

Internal auditing is an advisory function rather than an operative one. The auditors do not have authority to make or direct changes in procedures or operations. They make independent analyses, reviews, and evaluations of existing activities and procedures, and report the conditions as found. The recommended changes or other actions are then reviewed by management and operating officials.

Those in operative positions are expected to aid the auditors in their work and provide them with material and information, subject to security requirements, necessary for the audit.

Congress recognized the role and usefulness of internal auditing when it enacted such legislation as the National Security Act Amendments of 1949, the Post Office Department Financial Control Act of 1950, and the Budget and Accounting Act of 1950.



Bryan W. Mercer

The new office does not eliminate the need for auditing by the GAO, but can be an aid to that office in providing necessary data for their audit.

Mr. Mercer, the new office head, holds a B.S. degree in Accounting from the University of Maryland. He served with the GAO from 1951 until he joined the Bureau to take this assignment. He is a member of the Federal Government Accountants Association and the American Accounting Association.

RETIREMENTS

John P. Collins

John P. Collins, a Meteorological Technician at the Weather Bureau Airport Station at Grand Rapids, Michigan, retired September 21, after 20 years of Government service. A World War II veteran, Mr. Collins worked for the U. S. Post Office and the Forest Service before joining the Bureau in Ypsilanti, Michigan in 1948. He transferred to Grand Rapids in 1951. Mr. Collins has attended Hope College, Holland, Michigan, and the University of Michigan at Ann Arbor. His address is 2145 Frances Avenue, S. E., Grand Rapids 7, Michigan.

Milton O. Swenson

Milton O. Swenson, a Budget Analyst in the Administrative Division of the Regional Administrative Office at Salt Lake City, retired September 10 after 38 years of Bureau service. Mr. Swenson began his career at Duluth, Minnesota, later served at Chicago, East Lansing, Michigan, and Seattle. He was assigned to Salt Lake City in 1949. Mr. Swenson has attended the University of Minnesota and Michigan State College. His address is 222 S. West Temple Street, Room 203, Salt Lake City, Utah.

Fire-Weather Service Plays Important Role In Guarding Nation's Forest and Brush Lands

When forest or range lands are dry and strong winds threaten, the danger of forest fires becomes acute. The Bureau's Fire Weather Service provides the specialized weather forecasts that are used to prevent many fires from occurring, and to reduce the size of those that do occur.

The Fire Weather Service was officially named in 1916, but its origins go back further. As early as 1855 Oregon newspapers cited weather as a factor in a large forest fire. The papers again noted in 1861 that dangerous "fire weather" conditions of strong winds and dryness contributed to the starting of destructive fires.

After particularly severe forest fires in 1910 and 1912 in the North Pacific States, the U. S. Forest Service and the Western Forestry and Conservation Association appealed to the Weather Bureau to study meteorological conditions under which east winds occur, with a view to forecasting their development. With this information, preparations could be made to prevent fires by shutting down logging operations and refraining from intentional burning of slash and debris. These early forecasts enabled fire-fighting units to be on guard and deployed to attack fires with the least possible delay.

By the fire season of 1914, a forecasting system for the states of Washington, Oregon, Idaho, and California was in operation.

The Fire Weather Service, like the rest of the Bureau, has seen remarkable progress since 1916. Today, Bureau meteorologists work closely with fire control organizations during the fire seasons. On large western fires, they use self-contained mobile units equipped with an electric generator for power and light, propane gas for heat, sleeping accommodations, a two-way radio, and meteorological equipment including facsimile receivers, balloons for winds aloft observations, and portable anemometers. The forecasters combine fire-line observations and those from nearby permanent stations with regional and national charts to provide detailed forecasts for the fire officials, tailor-made to the situation at hand.

The Service has grown from a few men in a few locations to a nationwide service wherever fire-weather information is needed. It is concentrated in the more highly forested western States where the fires are often inaccessible and difficult to control. Future plans call for strengthening the service in all parts of the United States.

Fourteen meteorologists and 18 new mobile units were added to the Service the last fiscal year, making it possible to open new Fire Weather stations and to strengthen staffs at a number of existing stations.

Although the value of the Fire Weather Service cannot be translated into dollars and cents, leading forestry officials have repeatedly praised its work as invaluable in helping save thousands of acres of valuable timber lands each year, and in reducing the costs of fighting fires that do occur.

One of the 18 new mobile units used by the Bureau's Fire Weather Service.

Equal Employment

(Continued from page 132)

ment with his immediate supervisor and personnel officer before submitting the complaint for formal consideration. Supervisors and personnel officers are urged to adjust complaints that are well-founded as promptly and fairly as possible. If no satisfactory adjustment can be made, the supervisor or personnel officer should advise the employee how to submit his complaint in writing in accordance with paragraph D-6505, Chapter D-65, Weather Bureau Manual.

A letter of complaint should: (1) specify whether the alleged discrimination is based on race, color, religion, or national origin; (2) disclose the specific action or personnel matter complained of; (3) give approximate date or dates thereof; (4) identify the official responsible for the action, if known; (5) identify the position involved, its grade, and the unit or office in which located; (6) contain all factual information which the complainant may have to support the allegation of discrimination including dates, names of individuals involved, incidents, occurrences, and circumstances; and (7) if it involves a disciplinary action, set forth the specific allegation of discrimination as distinguished from a mere denial of a "letter of charges" on which the disciplinary action was based.

Time Limit

Written complaints must be filed within 45 days of the specific personnel action complained of, except that a complaint involving a discharge action must be made within 10 days of the effective date of such action, unless the complainant is prevented from filing within the time limits by circumstances beyond his control. A complaint will not be subject to these specific time limits if it is concerned with continuing discriminatory practice.

Employment Policy Officers

Mr. Hyman H. Bookbinder, Special Assistant to the Secretary of Commerce, has been designated as the Department of Commerce Employment Policy Officer. The Chief of the Administrative Operations Division has been designated as Weather Bureau Employment Policy Officer, and the Regional Employment Policy Officers are the Regional Administrative Officers; the Director, NWRC, Asheville, N. C.; the MIC, PSO, Honolulu; and MIC, WBAS, San Juan.

DEATHS

James T. Williams

James T. Williams, Meteorologist in Charge at Burbank, California at the time of his retirement, was accidently electrocuted June 13 while building a home in Arlington, Washington. Mr. Williams' first Bureau assignment was Helena, Montana. After working at Havre, Montana; Ellendale, North Dakota; St. Joseph, Missouri; Elko, Nevada; Winslow, Arizona; and Chicago, he was appointed MIC at Burbank. Mr. Williams is survived by his wife, Ena, and two sons; one of whom, James T. Williams, is a Bureau Meteorologist at Wake Island.

George B. Wurtz

George B. Wurtz, retired Meteorologist in Charge at Lexington, Kentucky, died August 30. Mr. Wurtz enlisted in the Signal Corps in 1890 and later served with the Bureau at St. Louis, Shreveport, New Orleans, Louisville, Savannah, and was Official in Charge at Pierre, South Dakota; Escanaba, Michigan; and Tampa, Florida. He is survived by a daughter, Mrs. Leonard C. Goodman of Louisville.

James L. Smith

James L. Smith, an Electronic Technician at Mobile, Alabama, died August 8. He had worked for the Bureau since 1957, and had been at Burrwood, Louisiana before transferring to Mobile. A ten-year Army veteran, Mr. Smith entered Federal service at Kessler Air Force Base in 1956. He is survived by his wife, Helen.

Eric U. Nummela

Eric U. Nummela, a Meteorologist at WBAS, Reno, died September 6. Mr. Nummela had been with the Bureau since 1942, and had served at Duluth, Minnesota; Kotzebue, Barrow, and Juneau, Alaska; and Reno. He is survived by his wife, Borghild and three sons.

Alpheus W. Drinkwater

Alpheus W. Drinkwater, pioneer Weather Bureau lineman and telegrapher who sent out to the world the news of the Wright brothers' first flight at Kitty Hawk in 1903, died at his home in Manteo, North Carolina, September 25, at the age of 87. An account of Mr. Drinkwater's activities during the Wright brothers' first flights was carried as a featured article in the November, 1956 issue of the Readers Digest.

Mr. Drinkwater worked for the Bureau from 1900 to 1926 when the Norfolk to Hatteras Telegraph Line was transferred to the Coast Guard. Afterwards he worked for the Coast Guard for about 20 years before retiring.

Mr. Drinkwater maintained an active interest in the Weather Bureau until his death. He served as storm warning display man cooperative observer at Manteo for many years. During hurricanes and severe storms he acted as a branch Weather Bureau office for the Outer Banks.

Congress Appropriates $114,825,000 for Bureau

Appropriations passed by the 87th Congress for Commerce and Related Agencies for the year ending June 30, 1963, which President Kennedy signed on October 18, 1962, provide $114,825,000 for the Weather Bureau.

Salaries and Expenses. Included is $59,500,000 for the Bureau's Salaries and Expenses (operating) budget; $3,250,000 more than was appropriated for FY 1962. After allowing for the cost of within grade salary increases (Ramspecks) and certain other cost adjustments, the Budget provides for the following new programs:

Operation and maintenance of new equipment.....$1,323,200
This will provide 68 electronic and maintenance technicians and related operating staff for the new radar microwave links, end of runway temperature and humidity and related instrumentation which the Bureau has placed in operation over the past year. Also included under this heading are tools and test equipment, electricity, parts and supplies and similar costs. Seven positions and related operating expenses are provided for the newly installed Catalina Island radar facility and provision is made for staff and supplies for two additional moving vessel upper-air programs.

Aviation Weather Services.....$300,000
This covers the costs of activating an airport station at the new Dulles jet airport.

Upper-Air Measurements.....$300,000
The budget provides $50,000 for establishing field aid type jobs in each Regional Administrative Office for improving the quality of the upper-air measurements, and $250,000 for one permanent and one mobile type upper-air station and expanded use of special upper-air soundings in the tornado belt of the Midwest. The latter action partially restores the mobile upper-air observing facilities withdrawn from this area last winter by the Air Force for reassignment overseas. Final determination as to exactly where the new stations will be located must await site surveys and other negotiations now in progress.

Fire Weather Services.....$150,000
This provides 10 positions and related costs for strengthening Fire Weather Services to the Nation's forests.

River Forecast Center - California.....$130,000
The establishment of a modern river forecast center at Sacramento is included in this item. Strengthening of the substation networks and related communications improvement necessary to support the river forecast center also is planned. The Hydrologic Services Division hopes to be able to arrange for the use of an electronic computer by this center. This is part of a longer range plan for placing much of the Bureau's Hydrologic forecasting work on electronic computers.

Climatology.....$85,000
Assignment of State Climatologists to Kentucky, West Virginia and Virginia is planned and funds for the 3rd phase of the decennial census of climatology are included. These new programs involve 14 new positions.

Executive Direction and Administration.....$100,000
This increase is primarily for staff necessary to support the new programs authorized for FY 1963.

Student Trainees....$100,000
This provides for an additional 100 student trainee positions, bringing to 264 the number that are now available in the Weather Bureau.

The appropriation also included funds for the following programs added by the Congress:

Improved Agricultural Weather Services:
Northwestern Arkansas.....$12,000
Southeastern Georgia.....$55,000
South Carolina.....$175,000
Southeastern Alabama, southwestern Georgia, and northwestern Florida.....$135,000
Lakeland, Florida area.....$29,000
Ft. Myers, Florida area.....$30,000
New Stations:
Stockton, California..$82,000
Beckley, West Virginia.....$75,000
Expanded hours of operation:
Grand Island, Nebraska.....$20,000

Research and Development. The Bill provides $11,000,000 for Research and Development, which is $2,000,000 more than was appropriated for 1962 and $500,000 less than the President's Budget. After allowing for base program adjustments these increases provide for:

Purchase of the 2 DC-6AB research aircraft....$1,000,000
The rental contract covering the lease of these two aircraft contained a purchase option which the Bureau has decided to execute. After making allowance for lease funds in the appropriate base, the increase provided by Congress is $60,000 less than required to cover the purchase. Consequently some

reductions in the level of planned research work will be required to cover the purchase.

General Circulation Research. To cover lease costs for the IBM STRETCH computer now in use on this project..... .....$1,095,000

Oceanographic research..... .....$50,000
Provides for studies of the interrelationships between the oceans and the atmosphere.

Hydrologic investigations.... .....$45,000
This provides for a modest expansion in studies of evaporation, snow melt and the development of improved stream flow forecasting methods.

Establishment of Meteorological Facilities. The Establishment of Meteorological Facilities appropriation for 1963 contains $4,325,000. Plans for new facilities which will be procured under this heading include:

Upper-air observational facilities.....$619,100
This covers facilities for the two new "tornado alley" stations and for three new stations in Mexico, for relocating and/or building inflation shelters at three existing upper-air stations and for purchasing transponder type ground equipment at 12 locations.

Weather Surveillance Radar.. .....$265,000
Microwave relay links for remoting the radar scope facilities will be purchased and installed at three stations. New time lapse photographic equipment will be provided for all 31 of the WSR-57 radar stations and radar precipitation indicators will be installed as accessory equipment at 3 places.

Surface observational equipment.....$2,353,200
End of runway ceiling and visibility equipment will be provided for 60 additional airports, runway visual range computers for 35 locations, and hygrothermometers and wind equipment for 50 stations. New instrumentation will be provided for 266 climatic stations and $200,000 is included for the continued modernization of hydrologic networks.

Construction of facilities.... .....$535,000
Plans provide for constructing new office quarters at Grand Rapids, Michigan; Detroit, Michigan; Elko, Nevada; McGrath, Alaska; and Tafuna, American Samoa. An inflation building and garage will be built at Anchorage, Alaska, one family type housing unit will be built at King Salmon, Alaska, and 6 housing units each at Tafuna and Wake.

Engineering and technical support.....$552,700
Twenty-one positions were approved to prepare specifications, make engineering site surveys, test production models, monitor equipment deliveries and supervise installations and construction.

Meteorological Satellite Operation. The final line item pertaining to the Weather Bureau in the appropriation bill is $40,000,000 for Meteorological Satellite Operations. The purpose of this appropriation is to establish and operate a system of meteorological satellites providing continuous worldwide weather coverage for use by the United States, and other countries. Because of the interrelationships of the operational system with the research and development work of NASA, precise schedules for implementing this program and launching satellites funded under the Meteorological Satellite Operation appropriation cannot be released at this time. Information concerning these plans will be issued as soon as definite schedules are established.

(NOTE) In relation to the urgent needs for increased support in many other aspects of the Bureau's activities and responsibilities, the total appropriation for meteorological satellites may appear relatively high. In considering this subject there are several factors to take into account, among them, that this program is part of the national policy of developing outer space for peaceful uses. It has very important implications in international cooperation and in aid to other countries. The funds appropriated for satellites were regarded as part of these many broader factors in national policy and the moneys were not available for use in other Weather Bureau programs.

Assistant Secretaries Given Voice

The Department of Commerce has announced that the Assistant Secretaries will be given a greater voice in determining budget figures and program emphasis in the Bureaus under their supervision.

The Assistant Secretaries will be given planning figures and program guide lines by the Secretary. The agencies will then submit budgets and justification material to their respective Assistant Secretary for review. The Assistant Secretary and the Bureau head and his budget staff will work together to formulate a program.

Length of Service Awards

40-Year Awards

Donald A. Bush
WBAS, Macon, Ga.
Elmore D. Knarr
RRC, Joliet, Ill.

35-Year Awards

Aurel J. Knarr
WBAS, Fort Worth
Arnold Matros
WBO, Williston, N. D.
Giles Slocum
MRPB, Central Office

30-Year Awards

George C. Allen
Ex. Off., Central Office

25-Year Awards

James T. Arnold
WBAS, Topeka
Mart G. Baldwin
WBAS, Harrisburg, Pa.
Stuart E. Cravens
WBAS, New York
Herbert C. Drechsler
WBAS, Kahului
Albert C. Flahive
WBAS, Boston
Louis Goldman
WBAS, Boston
Gilbert F. Grafton
WBAS, Los Angeles
Clifford D. Hall
WBFC, Chicago
Earl N. Hoffman
WBO, Devils Lake, N. D.
William C. Knoph
WBAS, Miami
Raymond H. Kraft
DMO, Miami
Clyde B. Lee
WBAS, Louisville, Ky.
Paul E. Lehr
NWSC, Central Office
Mary P. Palmer
NHRP, Miami
John M. Sharpe, Jr.
WBAS, El Paso
George F. Wall
WBAS, Fort Wayne
Fred E. Wells
F&SR, Central Office
Charles M. Woffinden
NMC, Central Office
Richard W. Woodley
WBO, Asheville
W. Gordon Wylie
WBAS, Wichita

20-Year Awards

Mason A. Bennis
WBAS, Providence, R.I.
Merle J. Brown
PSO, Honolulu
Charles Chibka
WBAS, Portland, Me.
Ruth M. Coatsworth
RAO, Kansas City
Albert J. Courtois
WBAS, St. Louis
Louis H. Craft
WBAS, Prescott, Ariz.
Stanley Day
WBAS, Indianapolis
Harold W. Ebel
WBAS, Green Bay
Francis E. Fuertsch
WBAS, Fort Worth
Walter H. Glassman
AWP, Boston
Frank H. Grabowski
WBAS, Detroit
Annie E. Grimes
Climat., Central Office
Ralph E. Hackman
WBO, Brookings, S. D.
Rheinhart W. Harms
WBAS, Milwaukee
Sarah O. Henkora
WBAS, Pendleton, Ore.
Rex J. Hess
WBAS, Missoula
Lynn S. Holcombe
WBAS, Greensboro, N. C.
Leslie R. Houser
WBAS, Dodge City
Florence I. Howard
RAO, Kansas City
Robert Kirkpatrick
F-W, Salem, Ore.
Frank Kowalski
WBAS, Evansville
Ralph F. Kresge
Hydro, Central Office
Louis Krezak, Jr.
RAO, Salt Lake City
Horace L. Lewis
RAO, Salt Lake City
Joseph Newmyer
WRPC, Kansas City
Wesley K. Orendorff
WBAS, Sea-Tac, Seattle
Walter W. Parker, Jr.
WBAS, St. Louis
Samuel C. Pearce
NHRP, Miami
Grace V. Shafer
WBAS, Pueblo, Colo.
Robert F. Shaw
PSO, Honolulu
Frederick G. Shuman
NMC, Central Office
Marjorie L. Simonton
WBAS, Great Falls, Mont.
Helen B. Stein
WBO, New York
Helen A. Taft
WBAS, Burlington, Vt.
Dempster R. Tredway
WBAS, Honolulu
Anthony F. Tubacki
WBFC, Chicago
Hugh D. Watson
WBAS, Missoula, Mont.
Jewell Wheeler
WBAS, Little Rock
William M. Willard
RFC, Kansas City
Robert N. Wing
WBAS, Lewiston, Idaho
Richard W. Woodley
WBO, Asheville

15-Year Awards

Thomas E. Aubin
WBAS, San Diego
Stuart F. Brown
WBAS, Baltimore
Claude W. Chapman
WBAS, Rochester, N. Y.
Peter Gertonsen
WBAS, Lewiston, Idaho
Charles R. Hansen
WBAS, Dayton
Sol Hirsch
WBAS, Baltimore
Leonard C. Jones
WBAS, Los Angeles
Vincent L. Kreinbrink
WBAS, Cincinnati
Russell G. Mann
RFC, St. Louis
Charles J. Merritt
WBAS, Evansville
Paul A. Montgomery
WBAS, Cleveland
Carl E. Wistrom
NAFEC, Atlantic City

Ben Singer

NMC Charting Head Wins $500 Award For Outstanding Work

Ben Singer, a Supervisory Meteorological Technician and head of the Charting Section at the Analysis and Forecast Branch of the National Meteorological Center, has been awarded $500 for his excellent work at the NMC. He was cited particularly for his innovation of using negative photoprocessing of charts for transmission over the national facsimile network.

This contribution eliminated the need for the more expensive direct positive paper and has proved more efficient in the tracing process prior to transmission over facsimile. A comparative review of costs of positive versus negative prints shows a minimum annual savings of $15,000.

Mr. Singer has been with the Bureau since 1941. He was appointed head of the NMC Charting Section in 1951.

Welcome to the Weather Bureau

William E. Adcock, Meteorologist, New Orleans
Anna J. Anderson, Secretary (Stenography), Central Office
Joyce A. Baire, Clerk-Typist, Central Office
Berkeley L. Barney, Clerk-Stenographer, Kearneysville, W. Va.
Royal G. Batchelder, Meteorological Technician, Fort Huachuca
Charles L. Beard, Meteorological Technician, Sterling, Va.
Joseph R. Bradley, Construction and Maintenance Representative, Central Office
Milton E. Brown, Meteorologist, Raleigh, N. C.
George P. Casely, Digital Computer Programmer, Central Office
Patricia A. Cate, Teletypist, Central Office
Paul G. Connor, Electronic ~~Maintenance~~ Technician, Miami
John R. Cope, Blueprint and Photostat Operator, Central Office
Dale A. Coudeau, Meteorologist, Memphis
Arthur S. Cummings, Meteorological Technician, Pt. Mugu
Joseph L. Czarniecki, Student Trainee, Central Office
Paul W. Dailey, Meteorologist, Chicago
Teodulo S. Diaz, Mail Clerk, Asheville
Russell C. Doolittle, General Physical Scientist, Central Office
Thomas E. Dorsey, Meteorological Technician, North Platte, Nebr.
Jerold W. Draper, Meteorological Technician, Central Office
Nancy A. Dukes, Clerk-Typist, Central Office
Donald L. Endres, Meteorological Technician, Buffalo
George L. Fossett, Construction Management Engineer, Central Office
Mae P. Gillus, Secretary (Stenography), Central Office
Gilbert A. Hense, Position Classification Specialist, Central Office
Albert M. Higashi, Student Trainee, Honolulu
Jerry D. Hill, Meteorologist, Cincinnati
Ray M. Hinson, Meteorologist, Baton Rouge, La.
Althea E. Hittle-Wolf, Secretary (Stenography), Central Office
Vernon G. Jacobsen, Meteorological Technician, Central Office
Thomas W. Jackson, Technical Publications Writer and Editor, Central Office
Thomas E. Johnson, Mathematician, Central Office
John H. Jones, Photographer-Platemaker-Pressman, Asheville
Annette S. Kallweit, Student Trainee, Cincinnati
Everitt W. Kendall, Mathematician, Central Office
Ronald L. King, Meteorological Technician, Central Office
Virginia C. King, Card Punch Operator, Miami
Charles E. Lambert, Meteorologist, Washington, D. C.
Billy M. Lewis, Meteorologist, Central Office
Harold D. Livingston, Clerk-Typist, Fort Worth
Carol Ann Luce, Clerk Stenographer, Central Office
William P. Martin, Meteorological Technician, San Francisco
Jose O. Martinez, Accounting and Fiscal Clerk, Central Office
Howard J. Mason, Jr., Supervisory Electronic Engineer, Miami
Jesse A. Mathers, Meteorologist, Washington, D. C
Ernest P. McClain, Meteorologist, Central Office
Ann R. McDaniel, Mathematician, Central Office
Bryan W. Mercer, Supervisory Auditor, Central Office
Phyllis N. Murata, Clerk-Typist, Honolulu
Ernest L. Myrick, Jr., Student Trainee, Charleston, S. C.
Wayne H. Neal, Meteorological Technician, San Francisco
William D. Sorrells, Photographer-Platemaker-Pressman, Asheville
James R. Spillers, Meteorological Technician, Atlantic City
Guinevere E. Stallings, Secretary (Typing), Central Office
Henry L. Stambler, Mathematician, Central Office
Lois A. Stearns, Meteorologist, Madison, Wisc.
Raymond F. Stover, Meteorological Technician, Fairbanks
William E. Stracener, Electronic Maintenance Technician, Lake Charles, La.
O. John Strandness, ~~Student~~ Trainee, Fargo, N. D.
Edna R. Thielhorn, Card Punch Operator, Miami
Robert J. Thompson, Meteorological Technician, San Francisco
Paul G. Toxie, Administrative Officer, Central Office
Ray S. West, Meteorological Technician, Buffalo
Ronald A. Willis, Meteorologist, Minneapolis
Ray I. Worley, Office Machine Operator, Asheville

Transfers

	FROM	TO
Wayne P. Albright	Nome	Las Vegas
George R. Alward, Jr.	Toledo	Nantucket
John D. Armstrong, Jr.	Anchorage	Yakutat, Alaska
Eldon H. Beals	San Francisco	Kwajalein Island
Jan P. Behrens	Las Vegas	Kwajalein Island
Donald R. Billman	Fairbanks	Point Arguello
Wesley E. Bode	Great Falls, Mont.	Wake Island
Billie J. Bryant	Jackson, Miss.	Wallops Island
Earle R. Brown, Jr.	Boston	Wallops Island
Brantley B. Christian	Miami	Montgomery, Ala.
Wendall M. Cook	Salt Lake City	Fort Huachuca
Neil M. Coulter	Pueblo	Antarctica
Thomas S. Craig	Anchorage	Greenville, S. C.
Frederick L. Crosby	Jackson, Miss.	Memphis
Robert L. Curll	Buffalo	Atlantic City
Fred A. Davis, Jr.	Boston	Richmond
Norbert F. Delver	Kwajalein Island	Las Vegas
Fred P. Durrett	Yakutat, Alaska	Nome, Alaska
Lawrence K. Eide	Columbia, Mo.	Kansas City
Walter L. Gibson	Buffalo	Meacham, Ore.
Margaret I. Grbich	San Francisco	Central Office
Ralph E. Hackman	Huron, S. Dak.	Brookings, S. Dak.
Benjamin A. Halstad	Las Vegas	Barrow, Alaska
Graden Harger	Knoxville	Wallops Island
Harvey E. Hastrup	Honolulu	Canton Island
Leslie W. Henderson	Lake Charles, La.	King Salmon, Alaska
Leroy D. Herman	Wichita, Kan.	Kwajalein Island
David S. Hill	New Orleans	Fort Worth
Lillian M. Hill	Chattanooga	Fort Worth
Dewain L. Hilliard	International Falls	Point Mugu
Frank E. Houghton	Central Office	Albuquerque
William B. Hovey	Boston	New York
Patrick E. Iannelli	Honolulu	Winnemucca
Thomas F. Jackson	Brownsville, Tex.	Yakutat, Alaska
Robert G. James	Abilene	Wichita Falls, Tex.
Thomas L. Jetty	Baton Rouge	Knoxville
Irvin S. Kingston	New Orleans	Lakes Charles, La.
Charles A. Klunder	Glasgow, Mont.	Kotzebue, Alaska
Frank J. Kocsis	Truk, T. T.	Point Arguello
Otis Lamar	Eniwetok	Yap, T. T.
John J. Langendoerfer	Sterling, Va.	Central Office
Benjamin J. LeBlanc	Mauna Loa, Hawaii	Kwajalein Island
Earl W. Leonard	San Francisco	Salt Lake City
Gene S. Levi	Kansas City	Antarctica
Harley W. Lilienthal	King Salmon, Alaska	Glasgow, Mont.
John J. Linnane, Jr.	Dayton	Asheville
Franklin W. Long	Chattanooga	Asheville
Charles Mallen	Fort Huachuca	San Francisco
Manley L. Malphrus	Seattle	Pt. Mugu
Allen L. Marechale	Juneau	Cheyenne, Wyo.
Earl H. Markee	Cincinnati	Idaho Falls, Idaho
George E. McCarley	Twinn Falls, Idaho	Boise
Robert E. McGlon	Los Angeles	Santa Catalina
Clarence D. Mc Kenny	Salt Lake City	Antarctica
Alexander C. Middleton	Central Office	San Juan
Thomas Milny	Johnston Island	New York
Robert L. Mitchell	San Antonio	El Paso
William F. Monahan	Guam	Point Arguello
Clyde P. Thomas	Wilmington, N. C.	Charleston, W. Va.
Russell W. Thompson	Sterling, Va.	Antarctica
Kiyoji Tomita	Honolulu	Canton Island
Preston O. Tuning	Huntington, W. Va.	Elkins, W. Va.
Eugene F. Visocky	Pittsburgh	Boston
Paul G. Vogel	Anchorage	Peoria
J. William Wantz	Seattle	Missoula, Mont.
Robert A. Watanabe	Central Office	Koror
Walter L. Watts	Fort Worth	Kansas City
Hubert B. Webb	Knoxville	Rochester, Minn.
Donald E. Weddle	Little Rock	Cape Hatteras
Boyd P. White	Albuquerque	Central Office
Robert G. Woodard	Canton Island	Buffalo
Donald E. Yager	Anchorage	King Salmon, Alaska

Volume 21 SEPTEMBER — DECEMBER 1962 Number 8

CONTENTS

Editorial	130
International Agreement on Satellites	131
Maps Broadcast Around the World	132
New Satellite Subsystem To Be Tested in 1963	132
Equal Employment Opportunity Program	132
Circulation Lab Dedicated in Washington	133
New Internal Audit Created at Central Office	136
Fire Weather Service	137
Obituaries	138
New Appropriation and Programs	139
Assistant Secretaries Given Voice	140
Length of Service Awards	141
NMC Charting Head Wins $500	141
Welcome to the Weather Bureau	142
Transfers	142

WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through which ideas and views may be exchanged to promote efficiency and teamwork in attaining our common goals. While the contents, unless otherwise specified, reflect the Central Office viewpoint, they are not instructions but are presented for information. Opinions, discussions or comments by readers are invited; they should be marked for the attention of the Editor, TOPICS. WEATHER BUREAU TOPICS is distributed for official use only.

15722-5