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TOPICS

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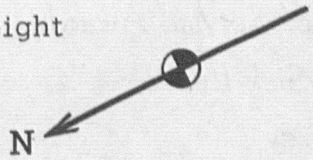
This composite cloud picture was obtained from film exposed on December 5 in a camera which was carried to a height of 86.2 miles by a rocket launched from the National Aeronautics and Space Agency Rocket Facility at Wallops Island, Virginia.



Volume 18 Number 1

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National Oceanic and Atmospheric Administration
Weather Bureau Topics and Personnel

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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.

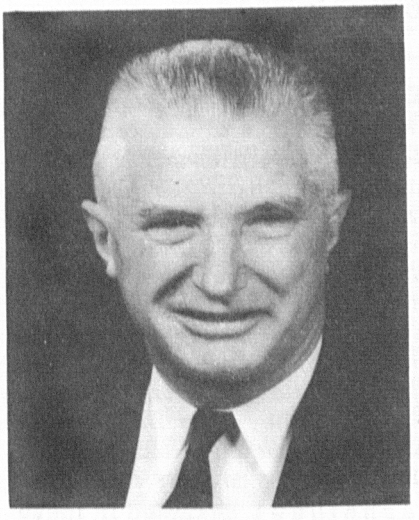
THE UNDER SECRETARY OF COMMERCE

Frederick H. Mueller

FREDERICK H. MUELLER, The Under Secretary of Commerce, first joined the Department of Commerce when he was sworn in as Assistant Secretary for Domestic Affairs by Secretary Sinclair Weeks on November 28, 1955.

He received his public schooling in Grand Rapids, and attended Michigan State University, from which he received his B.S. degree in 1914. Mr. Mueller was a member of the State Board of Agriculture of the State of Michigan for 13 years, until December 31, 1957. This is an unpaid State body which directs the educational activities of the Michigan State University.

He has been associated with the Mueller Furniture Company of Grand Rapids as a general partner since 1914. He is past president and one of the founder members of the Grand Rapids Furniture Makers Guild; a past president of the National Association of Furniture Manufacturers 1933-35; a past



president of Furniture Mutual Insurance Company; Director on leave of Peoples National Bank of Grand Rapids; former president of the East Grand Rapids Board of Education; a past president of the Rotary Club of Grand Rapids, 1935-36; formerly district governor of Rotary International, 1939-40; a past president of the Grand Rapids Chamber of Commerce, 1939-40; former Group Commander and one of the organizers of Civil Air Patrol; and the immediate past president of Butterworth Hospital in Grand Rapids.

During World War II, Mr. Mueller served as president and general manager of the Grand Rapids Industries, a group of wood-working manufacturers who pooled their facilities to make troop-carrying gliders and other aircraft components in support of the national defense effort.

Mr. Mueller is a man of many interests among them being weather and its applications to industry and commerce.

CAA Departs Commerce Family

UNDER the Act (Federal Aviation Act of 1958), the Administrator of FAA is given broad powers to promote both civil and military aviation. The Act replaces and repeals the Air Commerce Act of 1926, the Civil Aeronautics Act of 1938, and the Airways Modernization Act of 1957.

To meet the problems of the jet age, FAA is assigned the following prime functions:

1. The regulation of air commerce so as to promote its development, safety, and requirements in national defense.

2. Control of navigable airspace and the regulation of civil and military operations in the interest of safety and efficiency.

3. Development and operation of a common system of air traffic control and navigation for both civilian and military aircraft.

4. Development of a wartime plan for FAA operations.

5. Prescribing the minimum standards of design, materials, and workmanship for aircraft and other elements of aviation.

The Act also provides for appropriate participation by FAA officials in the investigation of aircraft accidents while final responsibility for such investigations remains with the Civil Aeronautics Board.

Transfer of 27,771 CAA employees to the FAA was one of the largest personnel shifts ever to be made in Government. By contrast, 24 employees of the Civil Aeronautics Board and 351 of the Airways Modernization Board moved to FAA.

This then is FAA in its infancy. In terms of its heritage--from its capable leadership down to its many thousands of experienced employees--it is new in name and structure, but not in terms of know-how and challenge. FAA has all the attributes of a winning team, with goals both immediate and in the future, perhaps with occasional set-backs instead of constant gains--but with great victories sure to be won.

Meteorological Satellite Section

THE National Aeronautics and Space Administration (NASA) has invited the Weather Bureau to act as its agent in the field of meteorological satellites and has transferred funds for that purpose. The Weather Bureau had already started research on this subject (see Memorandum from Chief of Bureau, dated March 21, 1958). Thus the Bureau has readily accepted the NASA proposal to pursue thoroughly the great possibilities of meteorological satellites.

Earth satellites will soon make it possible to obtain certain meteorological observations over the entire earth and to observe the atmosphere from above. These two satellite characteristics have important implications for improving the meteorological observing program. Improvement in weather analysis and prediction will occur in areas where observations are sparse. Moreover, the satellite's downward view will provide types of observations which have hardly been possible before.

The recently organized Meteorological Satellite Section, with Dr. Sigmund Fritz of the Office of Meteorological Research as Section Chief, will plan meteorological experiments and process and analyze meteorological data obtained from satellites. The MSS will conduct basic research in connection with these new data. Located in close proximity to the National Meteorological Center in Suitland, Maryland, it will also work with the Center to achieve the earliest practical application of satellite data.

The ultimate utilization of data from meteorological satellites involves the solution of many problems in (1) satellite instrumentation, (2) data reduction and processing, and (3) meteorological analysis. For this reason the Meteorological Satellite Section includes scientists with broad interests and capabilities as well as specialists in each of these three major fields, as outlined in a recent employment announcement which circulated all Weather Bureau offices and Central Office Divisions.

FUNCTIONS

Meteorological Analysis-One part of MSS will be concerned with the analysis of meteorological data from satellites. In anticipation of forthcoming satellite launchings this unit is designing experiments to simulate the types of problems which will arise when the satellite data finally become available. These experiments include the study of photographs from rockets, airplanes, and balloons; they also include map analyses in which cloud observations play a major role. The techniques designed in these preliminary investigations will then be ready for application to actual satellite data. The analysis unit is also studying the potential usefulness of satellite radiation measurements in explaining variations in the general circulation.

Data Reduction - The vast amount of information expected from meteorological satellites requires immediate planning for data reduction, processing, and storage. Therefore a data reduction unit within MSS is working closely with the meteorological analysis unit and with the instrumentation unit to determine the requirements.

Satellite Instrumentation - Satellite instruments for the immediate future are already being constructed by various contractors. Therefore, the instrumentation unit is working with the contractors to determine the over-all system characteristics. This will provide the meteorologists and the data reduction people with the information required in designing their systems.

The instrumentation unit will also start feasibility studies on future instrumentation of meteorological satellites. The results of these studies will be used to determine procedures to be followed in instrumenting future satellites.

SPECIFIC EXPERIMENTS

Near Future - Among the experiments on which MSS is working actively is the measurement of cloud cover from television cameras on the first post-IGY meteorological satellite. (This satellite is being developed under the sponsorship of the Advanced Research Projects Agency, Department of Defense.) This satellite, to be launched in the relatively near future, will contain three television cameras now being constructed by RCA. One of these cameras will have a field of view of about 1000x1000 miles with a resolution of $2\frac{1}{2}$ miles; the other cameras will have better resolution with smaller fields of view. The cloud data will be stored on tape and read out to a ground station once during each satellite orbit around the Earth. At the ground the television signals will be recorded both on film and on tape. These data will then be processed and used in research designed to improve the diagnosis of atmospheric conditions. Over areas of sparse data these observations will aid in detection, tracking, and diagnosis of changes in intensity of both tropical and extra-tropical storms, fronts, and other weather-producing systems. Even over the United States these data may be useful in giving more information on such features as small upper air circulation systems (see Hubert and Berg, Monthly Weather Review, vol. 83:119-124; 1955).

In addition five types of radiation sensors are being constructed for this satellite by the Army Signal

Research and Development Laboratory. These sensors will measure various components of the radiant energy emitted and reflected by the planet. Since the distribution of net heating of the atmosphere ultimately drives the atmosphere, this type of radiation data is of basic interest to meteorologists, and might be related to various aspects of the general circulation.

Longer Range Planning - Looking toward the future, many additional measurement techniques are being planned. The satellites now scheduled are spinning satellites; this introduces certain complications of measurement and data interpretation. Therefore, stabilized satellite platforms will be designed from which instruments can look straight down continuously. The presently-planned satellite orbit will not permit a view of the whole earth; therefore a pole-to-pole orbit is among the future projects. Still another plan for the future is a satellite orbit at about 22,000 miles from the earth with the angular velocity of the satellite being equal to that of the earth so that the satellite would remain above a point at the equator and view nearly the whole western hemisphere, for example, this would permit continuous observations of cloud system development, by contrast with presently-planned satellites which, during daylight hours, mainly see a point on earth only once a day.

Many additional types of measurements are being considered. Satellite radars can measure world-wide precipitation and cloud structure. The radiation emitted by the atmospheric gases may enable us to acquire some information about the world-wide distribution of water vapor, ozone, and carbon dioxide. These radiations could conceivably indicate world-wide temperature distribution near the tropopause and the lower stratosphere. One may even ask the question, "Will it be possible to measure the world-wide distribution of surface pressure by measuring in some way the total mass in an atmospheric column under the satellite?"

Thus the satellite promises to give us soon, truly world-wide observations of many important meteorological parameters. How far this new meteorological tool can carry us depends on the ingenuity of the scientific community. The Meteorological Satellite Section, with its meteorologists, physicists, engineers, and mathematicians will act as a focal point to ensure that meteorology will derive all possible benefits from the new exploration of the earth from space.

WMO Regional Meeting

THE Second Session of the WMO Regional Association for North and Central America (RA-IV) was held in Washington, D. C., from December 1-6, 1958. Regional Association IV is one of six regions into which the world is divided for purposes of the WMO activities. These Regional Associations normally meet once every four years; the First Session was held in Toronto, Canada in 1953. Dr. Andrew Thomson of Canada, as President of the Association, was Chairman for the Session. Nine of the 12 Members of the Association were represented; in addition there were observers from Korea, U.S.S.R., Venezuela, Greece, Caribbean Commission, and a number of international agencies interested in meteorology.

Dr. Reichelderfer was the Principal Delegate from the United States, assisted by Major Harvey T. Jacolick (AWS), and Arthur W. Johnson. In addition, Ralph L. Higgs, MIC, San Juan attended the Session as an advisor on Caribbean problems; Martin N. Rosenblatt, Weather Bureau meteorologist in Honduras, attended as a specialist on Central American problems; Santoro R. Barbagallo attended as the Region IV representative to the CSM Working Group on Telecommunications. Among those who were also called upon for advice were Charles G. Reeves for codes, Ben Singer and Frank W. Burnett for network problems, Dr. Woodrow C. Jacobs (AWS), Herbert C. S. Thom, and Delbert Peterson for climatological problems. In addition, Grover D. Hughes and Alan I. Brunstein served on the Secretariat as Technical Assistants to Mr. Jean R. Rivet, WMO. The item which received most study was the preparation of a basic regional network. The Association established what is considered a suitable network of surface and upper air stations for general meteorological use. Other items which received considerable attention were regional comparison of barometers, radar, telecommunications, observations from ships at sea, meteorological service to jet aircraft, climatology, technical assistance, and regional codes.

At the conclusion of the session, Dr. F. W. Reichelderfer was elected President of the Association for the next four years, with Dr. Bruinenberg of the Netherland Antilles as Vice-President. Mr. Grinsted of the British Caribbean Territories was elected Chairman of the Eastern Caribbean Hurricane Committee.

Although the delegates were very busy with an extensive Agenda for the week, many took the opportunity to visit Weather Bureau facilities in the Washington area.

AMS Professional Directory

PURSUANT to the policy of fostering development of applied meteorology and cooperating with those who are interested in the services of private consulting meteorologists, copies of the *Professional Directory* published in the Bulletin of the American Meteorological Society have now been mailed to offices in larger cities for issue to persons who may inquire for such services. Information regarding the form of reply to inquiries for individual services beyond the authority and capacity of a Government office has been disseminated in previous letters and items in *TOPICS*. In many instances it would be helpful both to the party desiring private meteorological services and to the meteorologists engaged in these services if in addition to the statement that private services are beyond the authority of the Weather Bureau, the additional information is offered that special services of this nature are available through consultants recognized by the American Meteorological Society.

The growth of requests for the services of meteorological consultants is encouraging evidence of development in applied meteorology. With increasing applications of the science in business and industry, there will be greater recognition of the importance of meteorology and greater support for the collection of data and the research that leads to advancement of the science and its professional applications. Cooperation in encouraging the expansion of legitimate and ethical private practice in meteorology also contributes to the advancement of the science and relieves the Bureau of potential demands that would add to already heavy work schedules and interfere with attention that should be given to the regular meteorological services of the Bureau.

Additional copies of the directory may be obtained when needed by request to the Central Office (Publications Section) or direct to the Secretary of the American Meteorological Society.

Code of Ethics for Government Service

ANY person in Government Service should:

PUT loyalty to the highest moral principles and to Country above loyalty to persons, party, or Government department.

UPHOLD the Constitution, laws, and legal regulations of the United States and all governments therein and never be a party to their evasion.

GIVE a full day's labor for a full day's pay, giving to the performance of his duties his earnest effort and best thought.

SEEK to find and employ more efficient and economical ways of getting tasks accomplished.

NEVER discriminate unfairly by the dispensing of special favors or privileges to anyone, whether for remuneration or not; and never accept, for himself or his family, favors or benefits under circumstances which might be construed by reasonable persons as influencing the performance of his governmental duties.

MAKE no private promises of any kind binding upon the duties of office, since a Government employee has no private word which can be binding on public duty.

ENGAGE in no business with the Government, either directly or indirectly, which is inconsistent with the conscientious performance of his governmental duties.

NEVER use any information coming to him confidentially in the performance of governmental duties as a means for making private profit.

EXPOSE corruption wherever discovered.

UPHOLD these principles, ever conscious that public office is a public trust.

(This Code of Ethics was agreed to by the House of Representatives and the Senate as House Concurrent Resolution 175 in the Second Session of the 85th Congress. The Code applies to all Government Employees and Office Holders.)

FROM: Little America Station
TO: Dept. of Commerce

For the Honorable Sinclair Weeks.

As you leave Washington to go North members of Commerce family stationed near South Pole send you greetings and best wishes. Weather Bureau, Bureau of Standards, Coast and Geodetic Survey personnel, totaling sixty-one, composed of last year's wintering-over party, replacements and summer scientists, thank you for your hearty support of International Geophysical Year scientific activities in Antarctica.

Harry Wexler, Chief Scientist
US-IGY Antarctic Program

FROM: Sinclair Weeks
TO: Harry Wexler

Greatly appreciate your farewell message on our work together in serving the Nation. It so warmed my heart that I hope its reflected warmth will be felt by you folks amid the Polar snows. America is proud of the things you are doing.

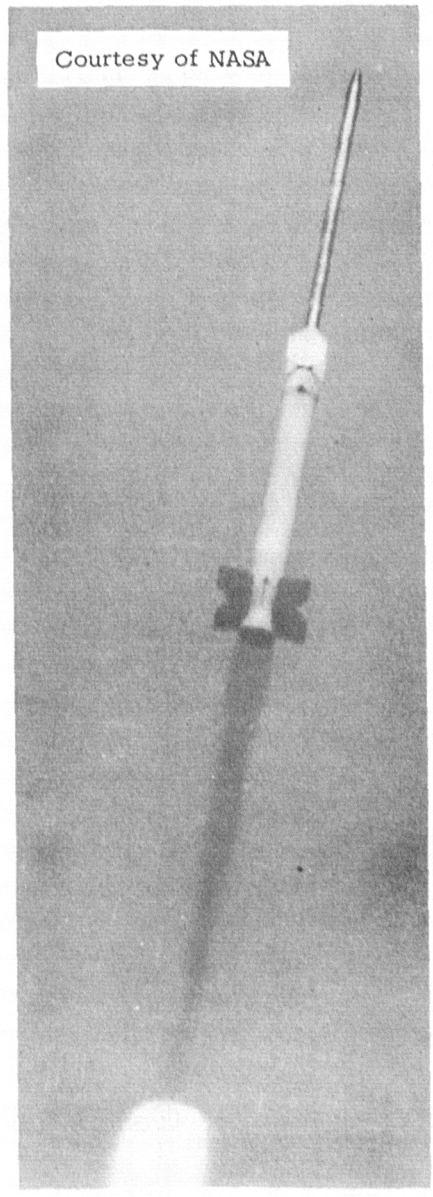
First Pictures of Weather Frontal Cloud Systems Obtained by WB Rocket

THIS successful firing of a photographic rocket developed in a cooperative effort by the Weather Bureau and the Office of Naval Research culminates a program which was begun when the Hurricane Research Project was first established in 1955.

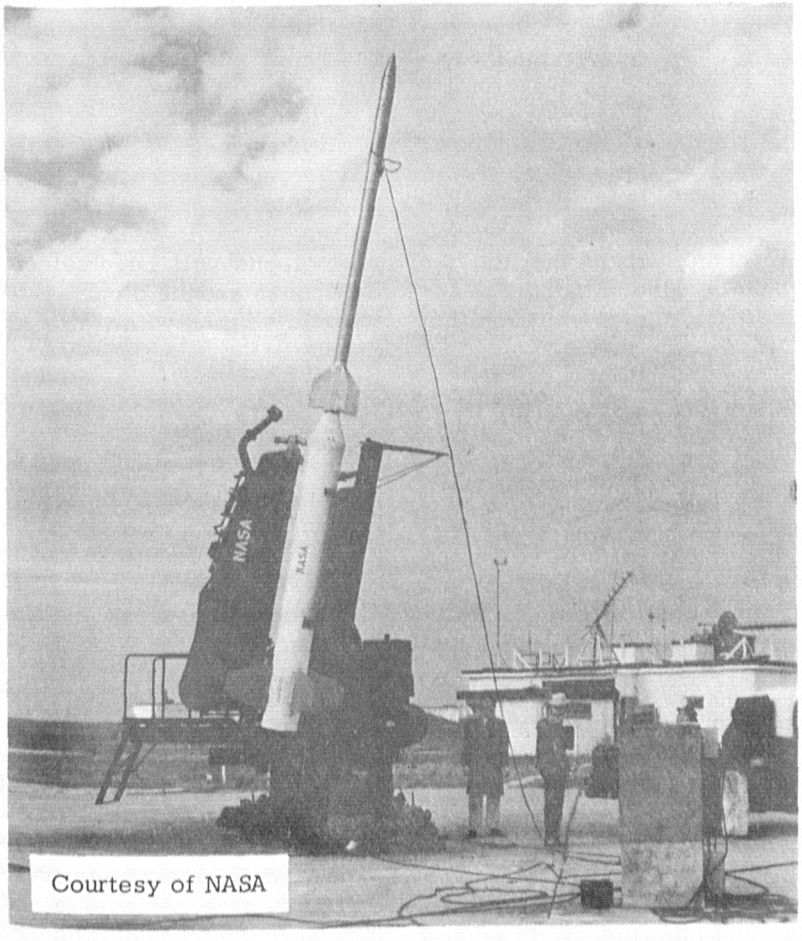
The feasibility of photographic meteorological phenomena from rockets was demonstrated by the Naval Research Laboratory on October 5, 1954, when an Aerobee Rocket launched from White Sands Proving Grounds obtained pictures of a mature cyclonic circulation centered over Texas at that time.

Since the first and principal task confronting the newly established Hurricane Project was to describe accurately the hurricane and its environment, the value of an over-all picture of the cloud systems associated with the hurricane was recognized. As a result the Weather Bureau entered into a joint project with the Office of Naval Research to develop a rocket system which could be used to obtain photographs of hurricanes. The Physical Science Laboratory of New Mexico A&M was selected as the contractor to design and construct the system. The National Aeronautics and Space Agency, formerly the National Advisory Committee for Aeronautics, cooperated by making available their rocket facilities at Wallops Island. The Naval Research Laboratory furnished technical advice and information, and the Navy furnished the ships and aircraft needed to recover the camera section from the sea. The two-stage Nike-Cajun rocket was selected as the vehicle to carry the instrument section aloft.

The first rocket was fired from Wallops Island on July 24, 1956 but the camera section was not



Rocket in full flight –
2 seconds after take off.



Photographic rocket on terrier launcher at NASA Wallops Island, Va.

recovered. Developmental work continued during 1957 which resulted in a new and simplified version. This new version was tested at Wallops Island on August 11, 1958. The rocket firing appeared to be normal but again the camera-bearing section was not recovered. A later analysis disclosed that the Cajun rocket had ignited prematurely causing excessive speed in the lower atmosphere which resulted in a breakup of the rocket. After carefully analyzing and testing all other parts of the system without finding any defects a new test firing was scheduled for early in December. This test firing took place on December 5 with the weather situation as indicated on the map appearing on the cover. The following is a brief report by Mr. Lester Hubert, Weather Bureau meteorologist, who represented the Weather Bureau at the test:

"HUGO TEST FIRINGS

"On the afternoon of December 5 two full proto-type photo-racon, NIKE-CAJUN rockets were fired from the NASA facilities on Wallops Island, Va. At 1236 the first rocket was fired but radar contact was lost almost immediately. The aircraft and destroyer made a search in the calculated 'splash area' but no contact was established.

(An analysis made later indicates that due to "weather-cocking" the first rocket probably landed in an area some miles removed from the calculated "splash area." If radar contact had been maintained this one would have probably been recovered as well as the second one. The second rocket landed over 30 miles from the calculated "splash area.")

"At 1410 the second rocket blasted off in a completely successful operation. Radar contact was maintained up over the 86-mile peak of the parabolic trajectory and down to where the horizon cut off contact, within a few seconds of 'splash.' The aircraft was vectored toward that point from the radar plot at Wallops Island and made radio contact with the Mytymouse homing beacon immediately upon arrival over the area. The destroyer then commenced vectoring on the aircraft, steamed through rough seas for an hour and one-half to the area where they were successful in locating and recovering the floating keg with its two 16 mm cameras. At this writing the film has not been developed, but the meteorological situation was such that the film should prove extremely valuable -- both for the test of the HUGO system for which this was fired, but in addition for the pre-launch analysis for the meteorological satellite.

"Conditions of the test left nothing to be desired, for the weather and sea conditions were typically those to be expected if HUGO were fired to photograph a hurricane. For that reason the search and recovery were made under the adverse conditions that exist near a hurricane, and a weather system had provided a variety of clouds to be photographed."

When the recovered film was developed it was learned that after burnout the rocket had remained in a flat spin so that the cameras were pointing alternately at the sky and at the cloud systems to the East. The final mosaic which has not yet been completed will show approximately twice the area and will extend as far south as the Florida Keys.

Arrangements are now being made for additional firings to take place this spring and summer and it is hoped that sometime this year photographs will be obtained of hurricanes and the cloud systems associated therewith.

Geneva Conference on Suspension of Nuclear Tests

A remarkably successful East-West Conference was held in Geneva, Switzerland, during July and August 1958. The Conference of Experts to Study the Possibility of Detecting Violations of a Possible Agreement on Suspension of Nuclear Tests - as its official title reads - was attended by a Weather Bureau official, Dr. Lester Machta, at the request of the U. S. State Department. The discussions were held between scientists and represent an achievement in East-West collaboration which exceeded the expectations of even the most optimistic supporters.

Dr. James B. Fisk of the Bell Telephone Laboratories was the head of the Western Delegation. Dr. Robert F. Bacher of the California Institute of Technology and the late Dr. E. O. Lawrence completed the American delegation. The British delegation was headed by Sir William Penney and Sir John Cockcroft, two of England's foremost nuclear scientists. The French were led by Professor Yves A. Rocard and the Canadians by Dr. O. M. Solandt. In addition to the delegates there were several dozen scientific advisers, authorities in their own fields of radiochemistry, atmospheric and underwater acoustics, seismology, electromagnetic transmission, nuclear physics, and meteorology. Also, the Western team included a few State Department advisers and translators. The Eastern delegation was led by Professor Evgeny Konstantinovich Federov, former Chief of the Hydrometeorological Service of the U.S.S.R. The U.S.S.R. was supported by representatives of Poland, Czechoslovakia, and Romania. The composition of the Eastern group appeared to parallel

Western Delegates to the Geneva Conference

From left to right: Sir John Cockcroft, U.K.; Dr. E. O. Lawrence, U.S.; Sir William Penney, U.K.; Dr. James B. Fisk, U.S.; Dr. Robert Bacher, U.S.; Prof. Yves Rocard, France; Dr. O. M. Solandt, Canada. Seated in background are the advisers to the western delegation. Dr. Machta of the Weather Bureau is not shown since he arrived after the photograph was taken.

that of the Western side.

It was primarily in the method of detection of nuclear tests by collecting radioactive debris in the atmosphere or in precipitation that most of the discussions of meteorology centered. It was agreed that aircraft would be used to collect fresh samples from air masses suspected of containing radioactivity from bombs. The aircraft would be dispatched to suspect areas based on the meteorological trajectories from the possible explosion site. The conference also recognized the possibility of increasing the number of aircraft flights over ocean areas for routine nuclear debris reconnaissance. Such additional flights could augment the existing oceanic weather reconnaissance.

The atmosphere played a role in other discussions as well. The direction and distance at which acoustic signals can be detected from large explosions is sensitive to the high altitude temperature structure and winds. From information collected during the U.S. "detection" of its own Nevada tests it was found that there was no preferential bearing toward which the sound signal will travel in the spring and fall season of the year. It is during this period in which the experts agreed that the transition of wind direction from east to west occurred in the important levels of the upper atmosphere. This was an important factor in deciding upon the spacing of acoustic detection stations. The monitoring of electromagnetic signals from a nuclear explosion also is affected by weather conditions. Lightning produces signals which are similar to those of nuclear tests. These spurious signals whose frequency of occurrence is several tens or hundreds per second represent unwanted noise. Discussions on the methods for discriminating

against this noise took some of the conference time.

Numerous scientific papers worthy of publication were generated by both sides. For example, on the Western side, an analysis of the detection of U. S. Nevada tests by a network of radioactivity monitoring stations in France was performed. The U.S. delegation could provide the source strength of the radioactivity for certain Nevada tests and the French the surface air concentration of fission products from the same tests. This provided a measure of the large scale mixing and cleansing of the atmosphere. Dr. Machta provided the conference with estimates of the coefficient of large scale horizontal and vertical mixing in the troposphere. Using these, the Eastern delegation then computed the expected ground concentrations at equivalent distances.

New Chief District Meteorologist

THE implementation of the District Meteorological Office program advanced another step with the appointment of Mr. Gordon E. Dunn as Chief District Meteorologist for Alabama, Florida, Georgia, Louisiana, Mississippi, and east Texas. Duties will be similar to those of Messrs. Van Thullenar and Schmidt, except that Mr. Dunn will continue his duties as Hurricane Coordinator as well as Meteorologist in Charge of the Weather Bureau Office in Miami. Mr. Dunn plans to visit stations in his district as time will permit.

IN the December issue of TOPICS on page 214, Second National Conference on Agricultural Meteorology, we failed to mention the sponsor of this conference. The conference in New Haven was a national meeting of the American Meteorological Society.

PHASES OF THE MOON

ALL times of moon phases, equinoxes and solstices herein are in Greenwich Meridian Time or "Universal" Time. To convert to local standard time, the following number of hours should be subtracted: for E.S.T., 5; C.S.T., 6; M.S.T., 7; P.S.T., 8.

Vernal Equinox, 0855 (8:55 a.m.) March 21, 1959.

Summer Solstice, 0350 (3:50 a.m.) June 22, 1959.

Autumnal Equinox, 1909 (7:09 p.m.) September 23, 1959.

Winter Solstice, 1435 (2:35 p.m.) December 22, 1959.

		d h m		d h m		d h m		d h m
☾ Last Quarter	Jan.	2 10 50	Mar.	31 11 06	June	27 22 12	Sept.	25 02 22
● New Moon		9 05 34	Apr.	8 03 29	July	6 02 00	Oct.	2 12 31
☽ First Quarter		16 21 26		16 07 32		13 12 01		9 04 22
○ Full Moon		24 19 32		23 05 13		20 03 33		16 15 58
☾ Last Quarter		31 19 06		29 20 38		27 14 22		24 20 22
● New Moon	Feb.	7 19 22	May	7 20 11	Aug.	4 14 34		31 22 41
☽ First Quarter		15 19 20		15 20 09		11 17 10	Nov.	7 13 23
○ Full Moon		23 08 54		22 12 56		18 12 50		15 09 42
☾ Last Quarter	Mar.	2 02 54		29 08 13		26 08 03		23 13 03
● New Moon		9 10 51	June	6 11 53	Sept.	3 01 55		30 08 46
☽ First Quarter		17 15 10		14 05 22		9 22 07	Dec.	7 02 11
○ Full Moon		24 20 02		20 20 00		17 00 51		15 04 49
☾ Last Quarter		31 11 06		27 22 12		25 02 22		23 03 28
● New Moon	Apr.	8 03 29	July	6 02 00	Oct.	2 12 31		29 19 09

Department Restates Policy on Membership in Employee Organizations

THE Department has reaffirmed and strengthened its policy on membership in employee organizations in a new issuance, Administrative Order No. 202-30. (The substance of this Order will be issued soon as a chapter of the Weather Bureau manual.)

Administrative Order No. 202-30 specifically "encourages" employees to join employee organizations of their choice. At the same time, the order emphasized that no one is to be subjected to pressure of any kind to join an employee organization if he does not wish to do so. Heretofore, the order has merely stated the right of employees to join, or refrain from joining, employee organizations of their choice.

The new order also makes it clear that the policy of the Department is to consult with employee organizations on matters of general interest to employees. Consultations with management officials of the Department in the same commuting area will be on official time, without charge to leave.

In general, no canvassing, soliciting membership, circulating petitions, or other employee organization business may be transacted on official time, either of the employee contacting another employee, or of the employee contacted. Meetings called by or with the approval of the bureau or office concerned, however, may be scheduled during working hours, and once a year each employee organization may hold a meeting during working hours to acquaint employees with the advantages of membership in it. Collection of membership dues during regular working hours will be permitted, where practicable, provided it does not interfere substantially with the work of the Department and does not conflict with safety or security regulations.

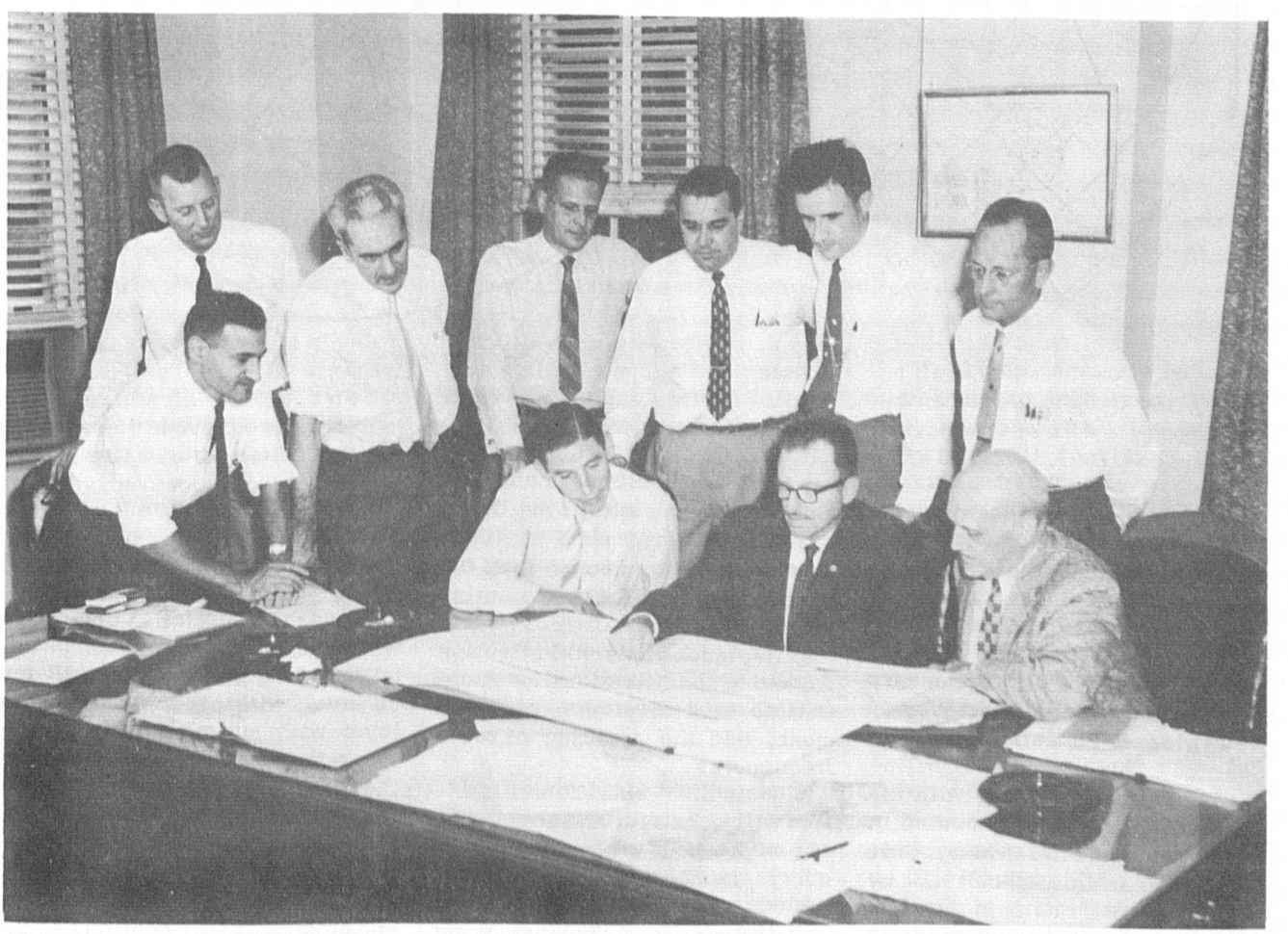
High Altitude Forecast Program

WITH the advent of the Jet Age, it becomes necessary to expand the existing aviation forecast service higher into the atmosphere. The Weather Bureau's answer to the problem is to enlarge the forecast service at seven offices, each one being assigned a particular area of responsibility (Figure 1) for reference only for flights originating within the United States or its Territories. This will avoid duplication of forecasting for any one area by several centers, and will allow for full concentration by each office on its own area. Six of the offices are the present Main Meteorological Offices (MMO's) and the seventh is the Analysis Center at Suitland, Md.

Figure 2 depicts the extra volume of air space which is to be covered by the new program and also the usage of the prognostic charts for the different types of flight operations.

A series of meetings was held the week of September 22 to formulate definite plans for the program. Central Office officials representing F&SR, NMC, and the International Coordination Office worked together with Mr. Jean Brown from San Francisco, Mr. Silvio Simplicio from New York, and Mr. Wilmer Thompson from Miami in developing plans for the program.

To provide for exchange of operational forecasts between offices and the dissemination of guidance material in the form of prognostics generated by the electronic computer, a new facsimile circuit is being installed (Figure 1). This will connect four high altitude forecast offices in



Participants in the meeting to formulate plans for the High Altitude Program
Standing left to right—S.G. Simplicio, A.C. Peterson, A.H. Nagle, J.A. Brown, W.P. Nash, R.P. James, W.L. Thompson
Seated left to right—F.W. Burnett, E.M.Vernon, F.W. Reichelderfer

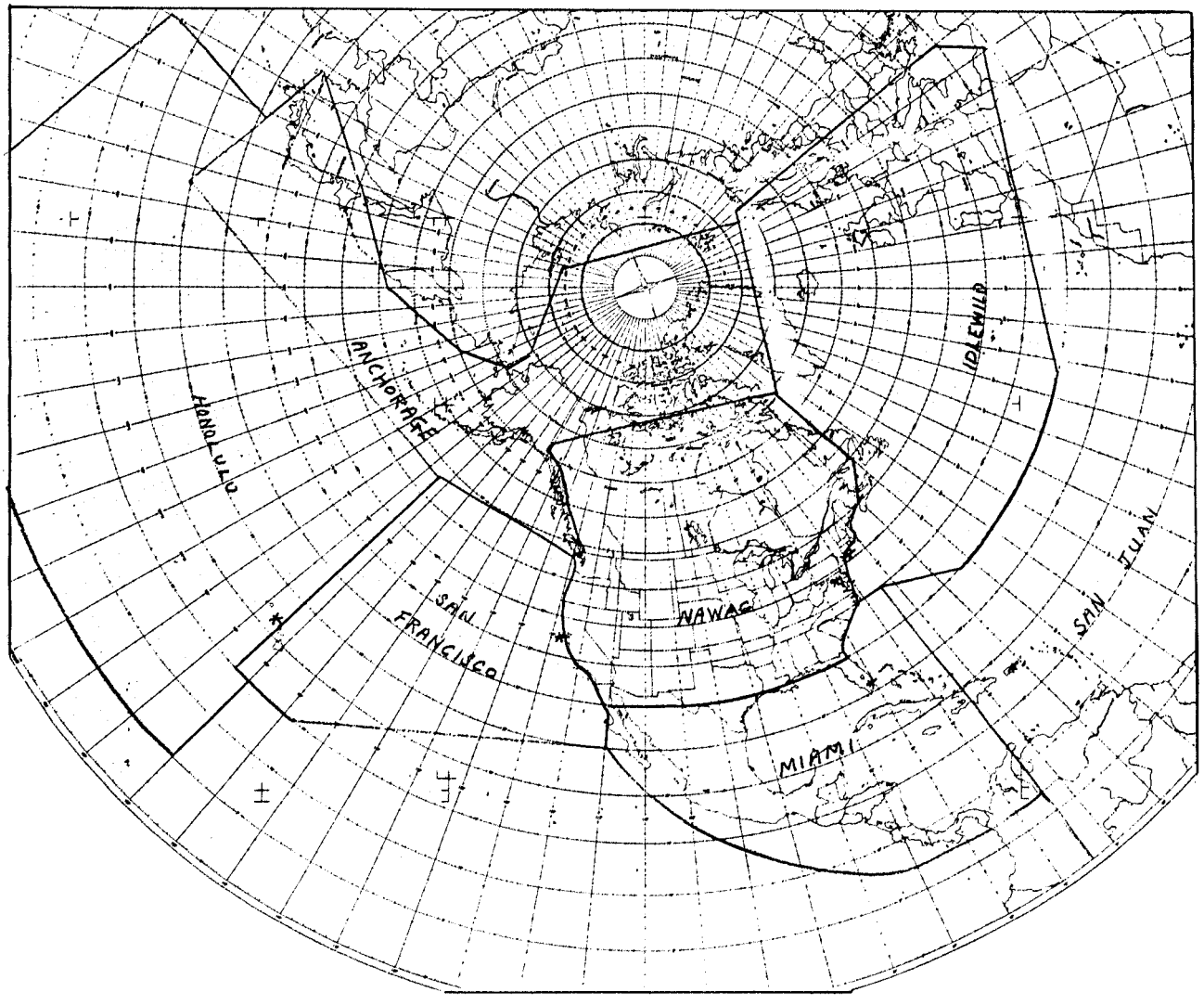


Figure 1 - Areas of Forecast Responsibility -
For reference only for flights originating within the United States or its Territories.

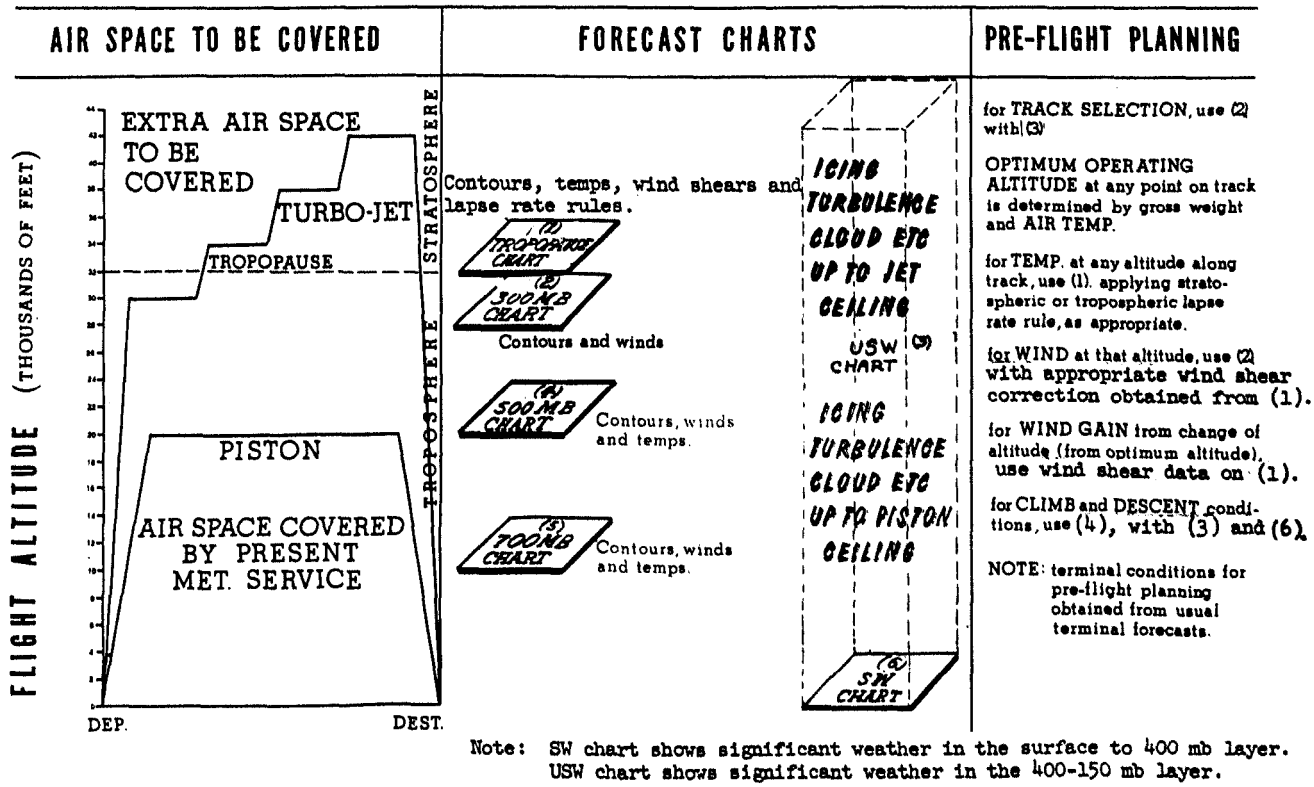
the United States (Idlewild, Suitland, Miami and San Francisco) to airports at Boston, Philadelphia, Baltimore, Washington, Detroit, Chicago, Kansas City, Denver, El Paso, Los Angeles, Fort Worth, New Orleans, Portland, Ore., and Seattle. This circuit will be installed in three phases, with the first stage to be implemented in January and the third in May 1959. The speed of this circuit will be 60 scans per minute at the beginning, but will be increased to 120 scans as special equalization equipment required for the speed up is made available. The centers at Anchorage, Honolulu, and San Juan will be connected into the system by radio facsimile during the summer or fall of 1959. This requires much study and attention involving specifications for transmitters and receivers, procurement, and the securing of radio frequencies.

Basically, each forecast office will construct and transmit a set of 24-hour prognostic charts every six hours. Each set will include a 500-mb, a 300-mb, a Tropopause and Vertical Wind Shear, and two significant weather (surface to 400-mb (this chart not prepared by NAWAC.) and 400-150-mb) prognostics.

The principle of the Tropopause-Vertical Wind Shear chart enables the operator to determine wind and temperature information in the horizontal and vertical for all levels within the 300-150-mb. layer with but two basic charts. Two reference planes are provided, the 300-mb. and Tropopause surfaces, from which all related information may be either interpolated through the aforementioned layer. Streamline analyses and prognoses will continue to be utilized in the tropical areas.

Any forecast documentation prepared by a forecast center for its area of responsibility will be

EN ROUTE CONDITIONS - PRE-FLIGHT PLANNING



Note: SW chart shows significant weather in the surface to 400 mb layer. USW chart shows significant weather in the 400-150 mb layer.

Figure 2

the forecast for any and all aircraft departing from U. S. airports and operating in the air space immediately above the area. Each center will use the forecast prepared by the responsible center as operational material for all flights whose routing takes them through the area concerned.

The guidance material from JNWP will be 500 and 250-mb. prognostics. These will be transmitted twice a day on a 1:30 Million scale in order to cover most of the Northern Hemisphere in one transmission. The prognostics from each forecast office will be a 1:15 Million scale, which is a more suitable scale for work and operational use.

Most of the personnel selections have been made for Idlewild and Suitland, and these two centers should be operational in January. Target dates for the other centers are: Anchorage and San Juan in February, Miami and San Francisco in March, and Honolulu in April 1959.

Until radio facsimile becomes operational to Anchorage, Honolulu, and San Juan the interim service will consist of coded messages transmitted over teletypewriter circuits. These are already being supplied to Anchorage from JNWP for the North Pacific and Polar routes.

Present plans are for all FAWS and major jet operational centers eventually to have drops on the new facsimile circuit.

Deduction of Expenses for Education for Federal Income Tax Purposes

DEPARTMENT of COMMERCE Information Bulletin No. 349, dated April 9, 1958, quotes the amended Internal Revenue Service Regulation, 1.162-5 - Expenses for Education, under which employees may deduct expenses for education on their income tax returns.

Briefly, the regulations of the Internal Revenue Service provide that expenses are deductible if the education is undertaken primarily for the purpose of:

a. Maintaining or improving skills required in the taxpayer's employment, or

b. Meeting the express requirements of the taxpayer's employer or applicable laws or regulations, imposed as a condition to the retention by the taxpayer of his salary, status or employment.

The law provides further that expenditures for education are not deductible if the education is undertaken primarily for the purpose of obtaining a new position or substantial advancement in position, or fulfilling the general educational aspirations or other personal purposes of the taxpayer.

In an effort to improve continually service to the public through elevation of performance levels, and maintenance of the highest degree of proficiency possible, the Bureau has always impressed upon its employees the importance of gaining academic training in subjects related to their work. In more recent years, scientific and technical advancements in the field have resulted in progressively difficult job requirements and academic training has been emphasized to an even greater degree. We feel, therefore, that the engagement of employees in educational training appropriate to their official duties clearly falls within the scope of (a) above and expenses incurred in this connection would be deductible for income tax purposes.

The foregoing is for information purposes only and represents the Weather Bureau's interpretation of the IRS regulation. Each employee should consider the facts of his individual case in preparing his tax return. Requests for interpretation of individual cases should be directed to the local Internal Revenue Service Office.

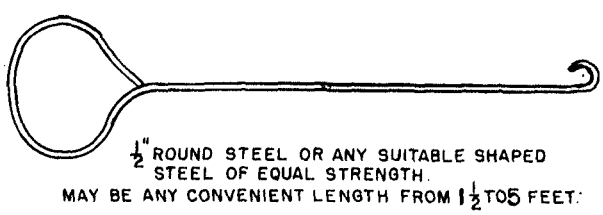
Handling Tools for Helium Cylinders

AN article in TOPICS for September 1957, recommended the procurement of small sized hand trucks for use in the movement of helium cylinders and other supplies, as an aid in overcoming injury hazards and time loss problems. Two labor saving devices are described here, as they may have application at some field stations.

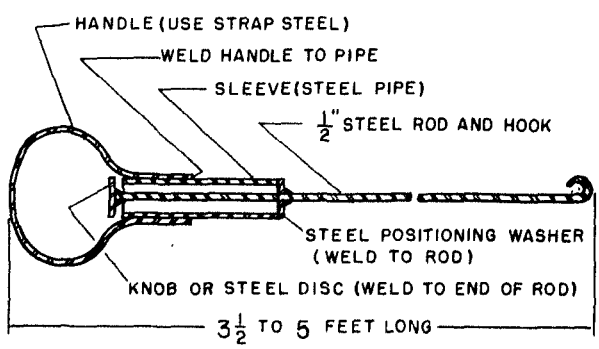
The dislodging of stock-piled helium cylinders, and their movement along the ground, is facilitated at some of our more isolated installations by the use of long handled hooks. These have been fabricated at the station from scrap parts and it is hoped that the working drawings supplied may enable similar construction if you so desire.

The second pictured hook allows almost a 360 degree turn in the hook end, which could readily prevent any wrist injury from a cylinder out of control.

Stations attempting to fabricate the above, should take precautions to see that the hook is not too long. Such could inadvertently turn on or break off the control valves, which are brittle at low temperatures, causing a loss of helium.



STANDARD LONG HANDLED HOOK (CYLINDER)



SECTIONAL VIEW OF SWIVEL HOOK

Parking Meter Fees Not Reimbursable

EMPLOYEES who have occasion to operate Government Motor Vehicles, or private vehicles on official business, will be interested in a recently published decision of the Comptroller General (B-136911):

"The imposition of parking meter fees by municipalities or States for vehicles owned by the Federal Government constitutes an unauthorized attempt to tax or burden the Federal Government contrary to its constitutional immunity and, therefore, neither the payment of parking meter fees for Government-owned vehicles nor the reimbursement of employees for parking meter deposits is proper."

CORRECTION

Correction to Meteorological Readings Assignment, TOPICS, October 1958.

Col. 70 - Assignment No. XVIII. Should read ... "according to R. S. Arthur's diagram," instead of "according to Munk's diagram."

Progress in Automatic Weather Station Development

A few weeks ago, the following hourly weather report was transmitted over teletypewriter Service A, Circuit 8002:

DTD M100ØE220-Ø11/2TRW-SW
293/51/32/3011/975/000/
R--VR--/DTD TESTING

This report, transmitted at normal teletypewriter speeds (75 words per minute), illustrates the present state of development in the field of instrumentation for automatically observing surface weather conditions. In the message the identifier DTD denotes the testing laboratory of the Instrumental Engineering Division where the automatic weather station is being developed. The first portion of the message, through the sea-level pressure, was manually inserted into a bank of push buttons prior to the beginning of the transmission and then automatically transmitted from the push buttons. The portion beginning with the temperature and continuing through the final slash mark was transmitted automatically from the sensors. The portion "DTD TESTING" was inserted by tape in the "remarks" position of the observation. Whenever an RVR computer is included the "R--VR--" might read "R32VR20" to indicate that on runway 32, the visual range is 2,000 feet.

Automatic weather station equipment is now being used at 16 stations to measure some, or all, of the following:

Runway visibility
Temperature
Dewpoint
Wind direction and speed
Altimeter setting
Precipitation amount
Thunderstorm

The equipment in its present form is shown in Figure 1. This particular set will soon be installed at Washington National Airport where it will be used operationally.

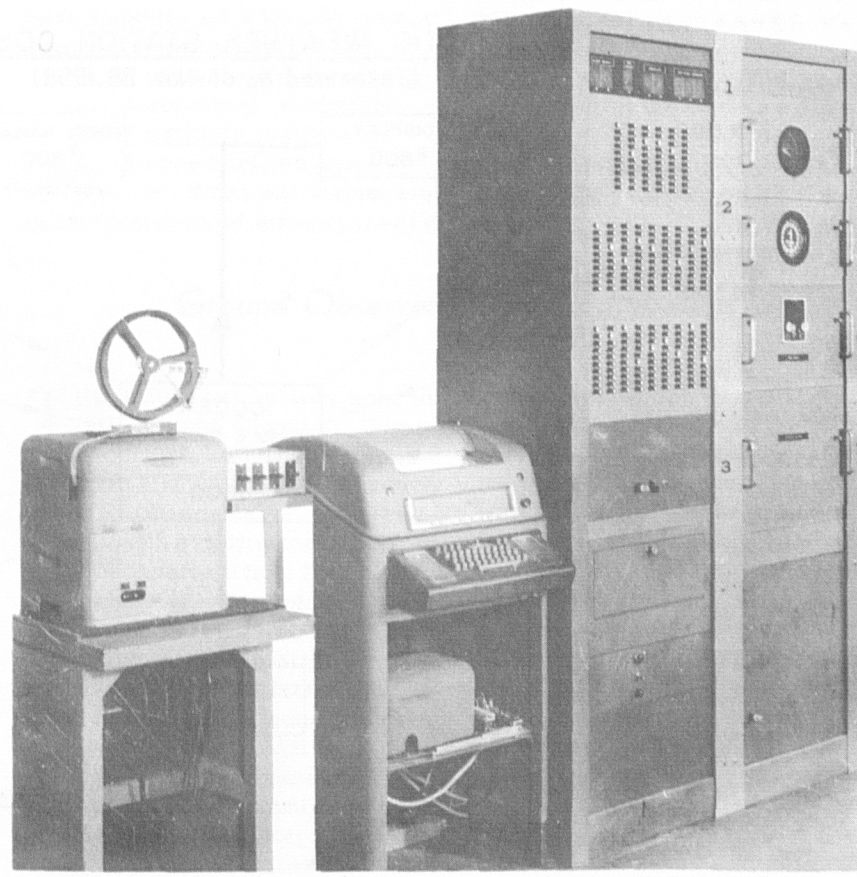


Figure 1. Automatic Weather Station

1. Digital display
2. Push buttons for visually observed elements
3. Coding unit
4. Dewpoint
5. Wind direction
6. Wind Speed
7. Altimeter setting

Intensive work is under way on further development of the equipment, and the Instrumental Engineering Division is working on a cloud-cover sensor, a ceiling interpreter (to be used in conjunction with the rotating-beam ceilometer), a sea-level pressure computer, "weather" detectors, and sensors for the pressure tendency and change. The automatic weather station is considered an integral part of the plan to modernize the National Aviation Weather Service. Future plans include extensive use of the equipment at both manned and unmanned locations, and provision for the automatic input of the observational data into numerical computers for use in forecasting. In its final form the equipment will automatically:

1. Collect raw meteorological data at the earth's surface.
2. Transmit this information over teletypewriter lines.
3. Provide a printed record of the station's observations.
4. Furnish a paper tape suitable for later use in transcribing the observations onto punch cards for climatological use.
5. Provide a continuous display, in digital form, of the current weather information in the

weather office and in other places such as the Airport Control Tower, etc.

The complete automatic weather station, operating at 75 or 100 words per minute, will be composed of a series of "plug-in" units which may be grouped together to yield any desired set of parameters. The cost of the station will depend upon the number of units included. Estimates based on current prices are shown in Figure 2.

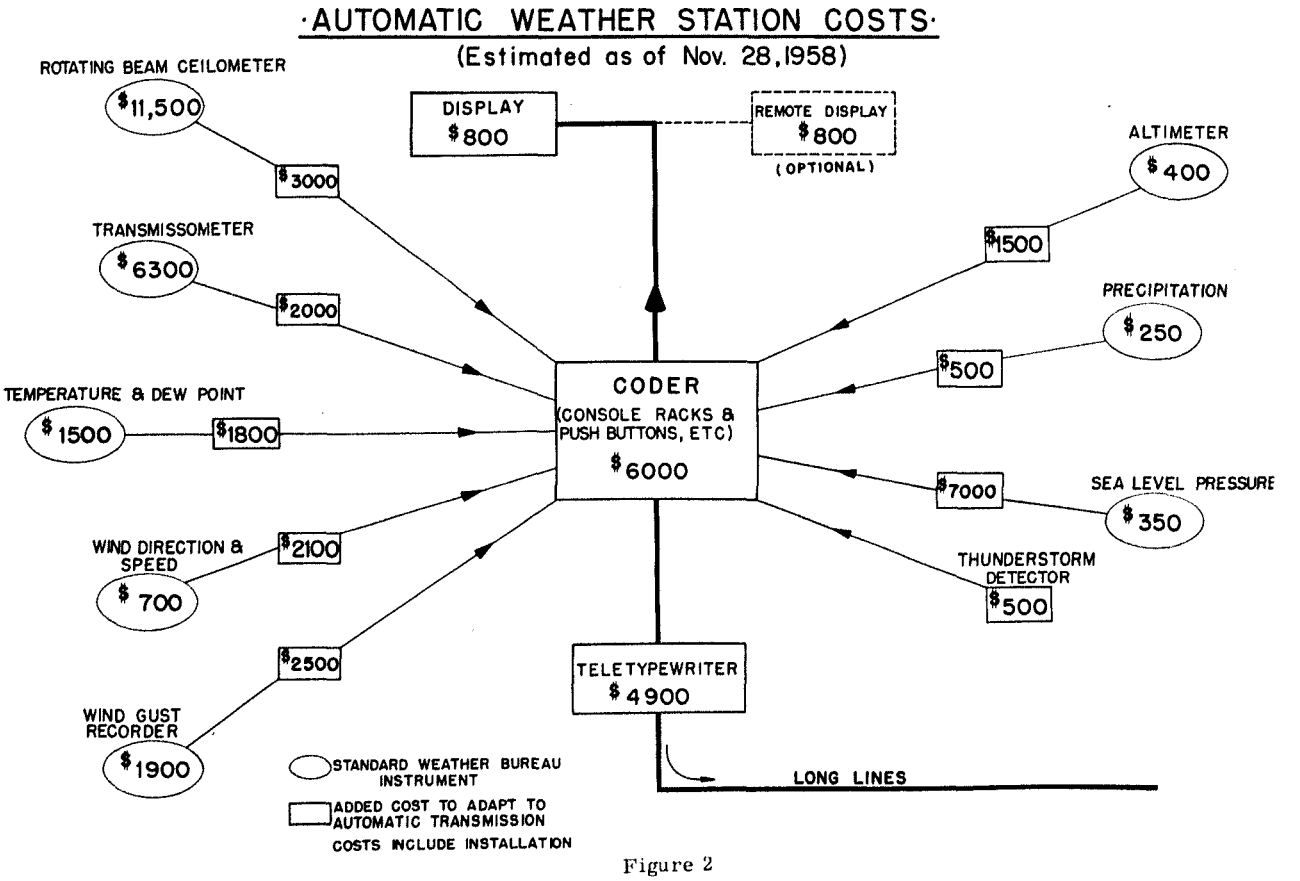


Figure 2

Meteorological Readings

Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXI: Universal Aspects of Atmospheric Electricity by O. H. Gish on pages 101 through 119 of Compendium of Meteorology.

About the Assignment: In addition to the spectacular display of electricity in lightning there are electrical forces throughout the earth's atmosphere which go unnoticed. Just what role they play if any in our weather picture is not certain, but they constitute a segment of our natural meteorological environment and are therefore important.

QUESTIONNAIRE

Assignment No. XXI

(To be answered by participants after reading assignment.)

(For complete information, see TOPICS May 1957.)

Col. 61 How does the charge of the earth as a whole vary with time of day?

1. Greatest at 1900 and least at 0400 local time everywhere
2. Greatest at 1900 GMT and least at 0400 GMT
3. A complicated function of local and universal time
4. The charge of the earth as a whole is independent of time

Col. 62 What is the mean value of the fair weather conduction current between the earth and the ionosphere?

1. 18 amps
2. 1800 amps
3. 180,000 amps
4. No reasonable estimate exists

Col. 63 What appears to cause the greatest changes in the electrical conductivity of the air near the earth's surface?

1. Purity
2. Temperature
3. Pressure
4. Moisture

Col. 64 What is indicated by the calculated and observed height profiles of positive air conductivity between 10,000 and 60,000 ft.?

1. High atmospheric pollution is negligible and cosmic radiation is the chief ion-producing agent
2. High atmospheric pollution is important and cosmic radiation is the chief ion-producing agent
3. High atmospheric pollution is negligible and cosmic radiation is not the chief ion-producing agent
4. High atmospheric pollution is important and cosmic radiation is not the chief ion-producing agent

Col. 65 According to the empirical equation for potential gradient with height, what is the value at sea level?

1. 50 V m^{-1}
2. 100 V m^{-1}
3. 130 V m^{-1}
4. 160 V m^{-1}

Col. 66 How is the separation of electric charge in a thunderstorm accomplished?

1. Primarily by a selective capture of ions by falling raindrops
2. Primarily due to the potential generated by the freezing of very dilute solutions of salt water
3. By a concentration of positive space charge in the updrafts of cumulus clouds
4. No theory of the separation of charge in thunderstorms has been well established.

Col. 67 What appears to be the most likely generator for maintaining the atmospheric potential?

1. cosmic radiation
2. wind friction
3. thunderstorms
4. condensation

Col. 68 What did measurements based on Coulomb's law indicate about the electrical conductivity of the air?

1. It varies considerably but is greatest in winter
2. It varies considerably but is greatest in summer
3. It varies little but is greatest in winter
4. It varies little but is greatest in summer

Col. 69 What has the worldwide aspects of atmospheric electricity been likened to?

1. A variable condenser
2. A spherical condenser
3. A variable resistor
4. A spherical resistor

Col. 70 What are the general characteristics of atmospheric electricity over the earth?

1. Surface is positive, electric potential increases with height
2. Surface is negative, electric potential increases with height
3. Surface is positive, electric potential decreases with height
4. Surface is negative, electric potential decreases with height

Ground Observer Corps Cooperation

THE letter below was sent to all Ground Observer Corps filter centers and will be published in AIRCRAFT FLASH to reach all GOC observers.

"1. The following letter to this headquarters from Mr. F. W. Reichelderfer, Chief of U. S. Weather Bureau, is forwarded with our congratulations. The contents of this letter will be published in the forthcoming issue of the AIRCRAFT FLASH.

'We want to express our appreciation to the members of the Ground Observer Corps for their cooperation in reporting tornadoes and other severe local storms during recent years. The reports have been extremely helpful to our offices as a basis for issuing warnings to individual communities for the prevention of fatalities. Military personnel assigned to the Ground Observer Corps have displayed a keen interest in the storm warning service. This enthusiasm has been reflected in the strengthening of the reporting system and a stimulation of volunteers in the Organization.

'Ground Observer Corps observers are deserving of praise for their conscientious efforts to watch for and report promptly many dangerous weather conditions developing in their localities. This voluntary service is so important that we would like to have the storm reports continued by direct phone call from the observers to the nearest Weather Bureau office after the Filter Centers are deactivated. We are asking the Weather Bureau official located near each Filter Center to contact the Commanding Officer and determine what arrangements can be made for encouraging observers to continue the reporting of severe weather.'

"2. Reference the last paragraph of Mr. Reichelderfer's letter, desire that Air Force personnel assigned to the GOC provide maximum cooperation to Weather Bureau officials. It should be pointed out that calls by the observers should be collect to the local Weather Bureau unit."

Launching Aid for Radiosondes

THE following article appeared originally in the April 1953 issue of TOPICS. It is being reprinted for the benefit of employees who may not have seen it previously, or who may have overlooked the possibilities at the time.

"A device which holds the radiosonde in a protected position while the observer removes the balloon from the inflation shelter

was recently constructed by personnel at Sault Ste. Marie, Michigan. Since this device might be of interest to observers at other stations, the suggestion is passed along.

"A wooden post, 2 x 2 inches, was set in a concrete block, and a spring clamp, made of 1/8th inch x 1 inch galvanized strap iron was attached to the top of the post."

The radiosonde should be positioned in the clamp so that the lower end of the ventilation duct is unobstructed.

Field employees are invited to use their ingenuity in the development of additional refinements, and to share their ideas with the Central Office.

One that comes to mind is the substitution of a cast iron pipe, in lieu of the 2 x 2 wooden post, threaded into a 12 inch base plate. This would tend to make the stand more portable, would increase stability and permit indoor storage when not in use.

Length of Service Awards

40-Year Awards

Central Office
Grace W. Carter

30-Year Awards

Central Office
Walter A. Jackson
Houston, Tex. WBO
Tedrow R. Swaim
Reno, Nevada WBAS
C. Eugene Shepherd
Roseburg, Oregon WBAS
Leonard J. C. Hedine
Williamsport, Pa. WBAS
John Courtney
Winston-Salem, N.C. WBAS
Wiley K. Sims

25-Year Awards

Central Office
Gordon D. Cartwright
Miles F. Harris
Edna E. Watts
Nashville, Tenn.
Annie Lee Lunn
San Francisco, Calif. WBAS
Martin McGurrin

15-Year Awards

Asheville, N. C. NWRC
Clarence V. Deweese
Thomas J. Waldrop
Central Office & Overseas
Marcus W. Brooks
Paul G. Carroll
Frank E. Christensen
Jack D. Cox
Maurice H. Cummings
James I. Elliott
Charles W. Free
Leo E. Hopp
John B. Hussar
Benjamin J. LeBlanc
Mary L. Pickeral
Leo R. Quenneville
Emmarhetta W. Smith
Charles F. Trainer
David Smedley
Charleston, S. C. WBAS
Anna C. Blyth
Cincinnati, Ohio WBRS
Robert H. McQuain
Greensboro, N.C. F.I.U.
William Fiocca
Greensboro, N.C. WBAS
Edward L. Paquet
LaGuardia Field, N.Y. WBAS
Martin D. Frain
Las Vegas, Nevada WBRS
James K.F. Bradley
Little Rock, Ark.
Neil H. Sharp
Mobile, Ala.
Clifford E. Bond
New York, N.Y. WBO
William J. McKee, Jr.
N.Y. International Airport
John Papale
William I. Pogermon
Raleigh, N.C. WBAS
Wilson D. Pierpoint
Richmond, Va. WBAS
William J. Conlon
Salt Lake City, Utah RAO
Maud M. Schneitter
Seattle-Tacoma, Wash. WBAS
Herbert J. Gudyka
Syracuse, N.Y. WBAS
Clarence R. McCoy
Tallahassee, Fla.
Frederick B. Power
Tulsa, Okla. WBAS
Arthur F. Kline
Wilmington, Del. WBAS
Duaine J. Kline

10-Year Awards

Anchorage, Alaska WBAS
Robert B. Caldwell
Frank E. Lambrecht
Anchorage, Alaska WBRAO
Amey Wilson
Augusta, Ga.
Robert S. Ellis
Boston, Mass. AWP
Joseph Takach, Jr.
Central Office & Overseas
William L. Exley
William T. Fenwick
Roberts D. Lehman(Asheville)
Nicholas J. Ropar, Jr.
Francis Rouse
Walter S. Spuhler
J. Allen Wallace, Jr.
Chattanooga, Tenn. WRPC
Georgia S. Johnson
Columbia, Mo. WBAS
Robert S. Veach
Denver, Colo. WBAS
Kathryn C. Gray
Kansas City, Mo. WRPC
Dua A. Maret
Madison, Wisc.
Peter M. Kuhn
Nashville, Tenn.
Willard W. Patterson

Unused Sick Leave

Asheville, N.C. NWRC
Rosella B. Bilton
Carl R. Byrd
Lillian S. Glosson
Gaston Haller
Bismarck, N. Dak. WBAS
Rd M. Rauch
Carl J. Sanderson
Canton Island WBAS
Harold Q. Van Dyke, Jr.
Central Office
Santoro R. Barbagallo
Bernard Edelman
Bernard Rocklin
Dayton, Ohio WBAS
John J. Linnane

Grand Junction, Colo.
Kenneth T. Harlan
Honolulu, T. H. PSO
Robert S. Ingram
B. L. Johnson
Kansas City, Mo. WBRAO
Victor E. Stoll
Koror WBO
David Miller
Mauna Loa Observatory
Clifford M. Kutaka
Jack C. Pales
Minneapolis, Minn. WBAS
Kenneth C. Astell
Erwin E. John
Clayton E. Moe
John J. Parry
Murl V. Renneke
New Orleans, La. WBAS
Charles M. Crouch
James H. Miller
William O. Sisk
New Orleans, La. WBO
Robert B. Carter
Margaret J. Potter
Portland, Maine WBAS
Howard A. Slauenwhite, Jr.

NEW MIC

Fort Wayne, Indiana

CLYDE H. DOWNES, who has been Principal Assistant at Fort Wayne for over three years, has been selected to succeed Mr. Harms as MIC at that station. Mr. Downes is 43 years of age, entered the Weather Bureau on June 24, 1942 as Junior Observer, and his entire service has been at the Fort Wayne station.

RETIREMENTS

Henry C. Slenes

HENRY C. SLENES, Meteorologist, WBAS Helena, retired December 31 because of disability. With the exception of an interruption to serve with the Air Force during World War II, Mr. Slenes has spent his entire career of over 30 years' service as a member of the Helena staff.

Entering the Bureau shortly after graduation from Helena High School, Mr. Slenes began his career as a Minor Observer on September 18, 1929. His high devotion to duty and fine work in the various phases of the station program won for him the respect and admiration of co-workers and supervisors alike and through experience and study he advanced to the position of Forecaster at the Helena station.

Mr. Slenes will continue to live in Helena where he can be contacted at 214 Joliet Street.

Herschel D. Smith

HERSCHEL D. SMITH, MIC, Apalachicola, Florida, retired December 31 after more than 36 years of government service.

A native of Georgia, Mr. Smith graduated from Manchester, Georgia, High School. Following four years in the U. S. Navy, he embarked on his Weather Bureau career as a Junior Observer at Savannah on July 16, 1926. From his initial assignment he went on to Key West in 1928 and Greensboro, N. C., in 1929. He accepted transfer to Wichita with promotion to Meteorologist on September 1, 1930, remaining at that station until September 1942 when he commenced his duties at Apalachicola.

Several years ago Mrs. Smith opened a small jewelry store in Apalachicola. Now that he has retired, Mr. Smith will join her in operating the shop. They are also planning to build a new home in the near future. Friends may continue to contact them at the following address P. O. Box 25, Apalachicola, Florida.

Rose I. Cullen

ROSE I. CULLEN, Clerk in the Fiscal Section of the Central Office at the time of her retirement August 31, 1944, died November 30 in Washington. She entered the Weather Bureau September 2, 1926, by transfer from the Veterans Administration.

Mrs. Cullen is survived by a daughter, Catherine J., who is employed as a Secretary in the F&SR Division of the Central Office.

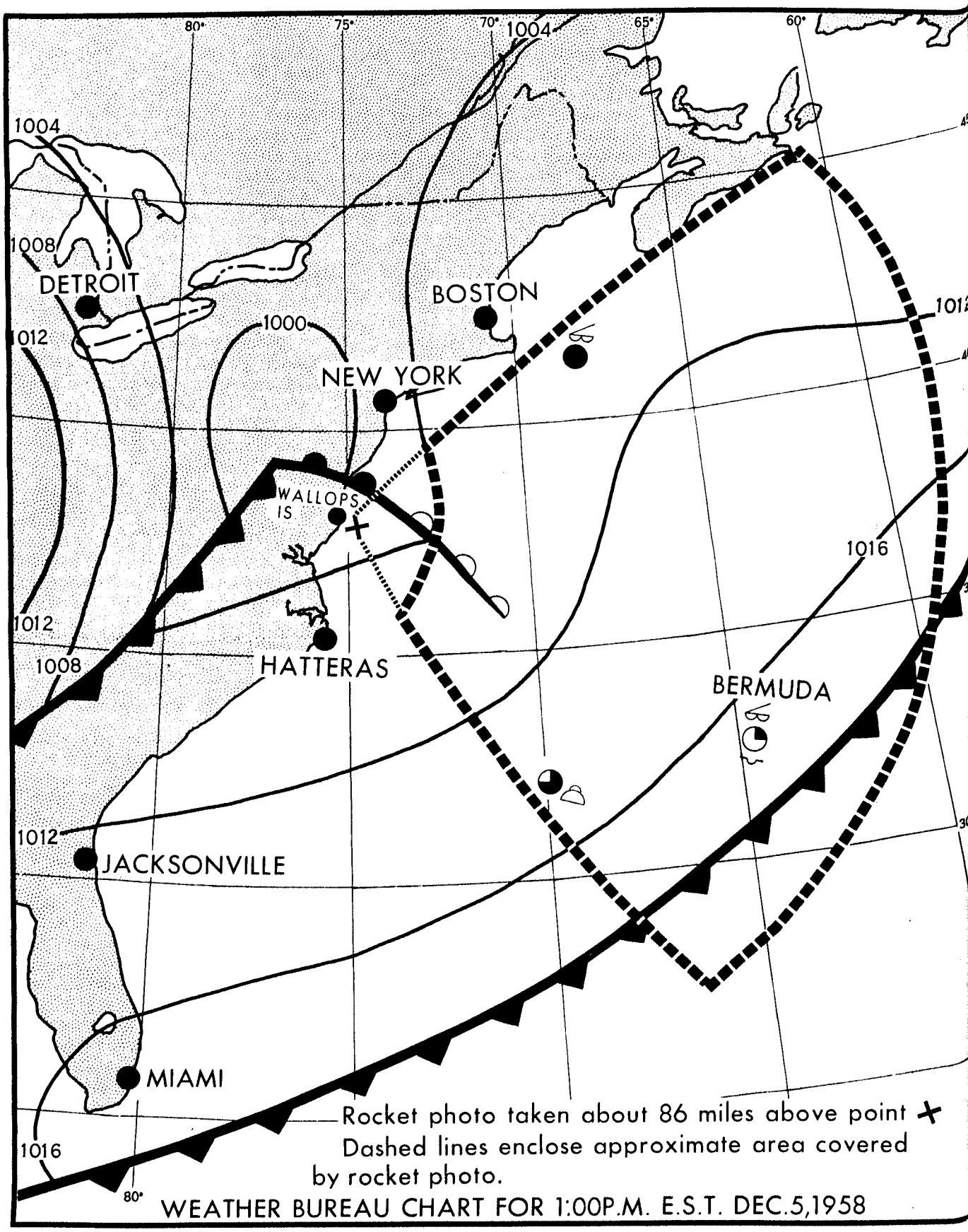
Paul J. Venezia

PAUL J. VENEZIA, Meteorological Aid, WBAS Boston, died of a heart attack while on duty on November 30 at the age of 46.

Mr. Venezia was born in Avellino, Italy, but came to the United States with his parents as a child, receiving his education in Boston. He served as an Aerographer's Mate in the Navy during World War II, and shortly after discharge from the military service, he accepted his first assignment in the Federal Service with the War Department at the Watertown, Massachusetts, Arsenal. In January 1947 Mr. Venezia entered the Weather Bureau at Boston, serving there until May 1952 when he transferred to Columbus, Ohio, as Substation Inspector. He returned to Boston in October 1953 as a Chartman at the Weather Bureau Airport Station.

In reporting his death, Mr. Tenenbaum, MIC, WBAS Boston writes, "Mr. Venezia was a cheerful person, well-liked by his fellow workers. He was conscientious, dependable, and very cooperative."

Mr. Venezia is survived by his wife and two sons, 8 and 5 years of age, who live at 39 Windmill Lane, Arlington, Mass.



A portion of the weather map at 1:00 p.m. on December 5. The dotted lines shown thereon enclose the area represented by the picture.

WEATHER BUREAU

FEBRUARY 1959

TOPICS

An artist's conception of the preparations for an early morning release of a train of ozonesondes. (See Weather Bureau Ozone Program, page 25). The picture depicts the inflation of the large 70 foot diameter polyethelene balloon on a special launching trailer. After the balloon is released from the trailer, a truck, to which the load line is attached, follows the balloon until it is vertically overhead; at this time the load is released.

The ozonesondes employ radiosonde transmitters to telemeter their data back to earth. The instruments will be tracked by AN/GMD-1A and SCR 658 ground equipment. A helicopter will be used to recover the instruments.

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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.

UNDER SECRETARY FOR TRANSPORTATION

John J. Allen, Jr.

UNDER Secretary of Commerce for Transportation, John J. Allen, Jr., took office on January 2, 1959. He was born in Oakland, California, in 1899. Mr. Allen attended Oakland public schools before enlisting in the Navy in World War I. He graduated from the University of California with an A. B. degree in 1920 and with a J. D. degree (Doctor of Laws) in 1922 and went into private law practice the same year. He was elected to the Oakland Board of Education in 1923 and he served on the board for 20 years.

During World War II, Mr. Allen had a tour of duty with the Navy from 1942 to 1945 and rose to the rank of Lieutenant Commander. He was elected to Congress in 1946 where he served as a member of the House Merchant Marine and Fisheries Committee until the end of his present term.

As Under Secretary for Transportation, Mr. Allen is chief advisor to the Secretary of Commerce on the transportation policy of the Federal Government. Mr. Allen also has supervision over the Bureau of Public Roads, Maritime Board, the Defense Air Transportation Administration, and the Weather Bureau. The Weather Bureau has already enjoyed visits by Mr. Allen and is glad to see him in the Department of Commerce family.

New Director, Aviation Weather Services

NEWTON A. LIEURANCE, the first to hold the position established several months ago as Director, Aviation Weather Services (see September 1958 TOPICS), has transferred to the new Federal Aviation Agency. Mr. James W. Osmun, formerly Regional Administrative Officer of Region I, has succeeded Mr. Lieurance.

Jim is well known in aviation circles having been a pilot himself since his barnstorming days in 1927. His intense interest in meteorology which developed as a result of his frequent contacts with the Weather Bureau resulted in his joining the organization in 1930. With the exception of military duty with the Army Air Corp (now Air Weather Service) from December 1940 to January 1946, where he rose to the rank of Colonel, Jim has devoted his career to service in the Weather Bureau. (See January 1957 TOPICS)

Mr. Lieurance is assigned to the Research and Development Bureau of the new Federal Aviation Agency. His specific job is Chief, Weather Division, Development Directorate. In addition, Newt serves as Principal Meteorological Advisor to the FAA Administrator and represents the FAA in meteorological matters involving the Department of Defense, the Department of Commerce, and user groups. Mr. Lieurance will continue to work closely with the Weather Bureau on aviation matters.

Recruitment of Meteorologists

MOST Weather Bureau personnel are aware of the general plans that have been developed for strengthening the Bureau's Aviation Weather Services. The extent to which individual projects in the "Design for a Modern Aviation Weather System" are implemented in any given year will depend on the availability of funds, but some strengthening is already under way. For example, the implementation of the High Altitude Aviation Forecasting Service, and the staffing of our WSR-57 radars soon to be installed.

In the next several years other planned projects from the Aviation Plan are expected to reach the stage requiring additional trained meteorologists. Completion of the entire plan for strengthening the aviation weather services could mean the addition of over a thousand employees. Most of these new positions will be in

the meteorologist category.

Other areas of Weather Bureau program also are concerned with recruitment of trained personnel. New opportunities for the application of computers in solving forecast and research programs will make it necessary to hire mathematicians and computer programmers. Expansion of work in the field of meteorological satellites will require physicists, mathematicians, meteorologists, and engineers.

In addition to the above requirements, a need continues for trained hydrologists, climatologists, meteorologists, instrument and facilities engineers to fill existing jobs that become vacant through resignation, retirement, or death. Between 100 to 200 such vacancies occur during a normal year.

For a number of years following World War II many meteorologists, trained by the military, were available for Weather Bureau employment. This source has now been used up. Currently, only a few meteorologists are being recruited from those who have completed their required military service. It accordingly is becoming necessary for the Bureau to look to the graduating meteorologists of this country's colleges and universities as the chief recruitment source. But this source will not be sufficient and several supplementary approaches are planned to strengthen our recruitment programs.

(a) Recruitment teams from the Central Office are visiting universities having meteorological departments to interview prospective employees. Each team is made up of a Bureau scientist and a personnel official.

At each university, the team speaks to an assembled group of students from departments of meteorology, mathematics, physics, and engineering, at which time there is a general discussion of employment opportunities within the Bureau. This discussion is followed by a question and answer period. Interviews are arranged later with all interested students. In addition, the scientist member gives a technical lecture at an evening seminar or in some cases to one of the advanced meteorology classes. These technical presentations have attracted students and instructors alike and a great deal of interest in Weather Bureau programs has been created on the campus.

(b) Enlargement of the Student Trainee Program. For the past several summers a limited number of college students have been employed as Student Trainees. We plan to increase the number of such trainee positions this summer. Students in meteorology, mathematics, physics, engineering, climatology, hydrology, and related sciences inquiring of field officials as to prospects for summer trainee positions should be encouraged to write to their repective Civil Service Commission Regional Offices for application forms. Closing date for applications is April 2, 1959. Civil Service Commission Regional Offices are located as follows:

Regional Director
First U. S. Civil Service Region
Post Office and Courthouse Bldg.
Boston 9, Mass.

Regional Director
Second U. S. Civil Service Region
Federal Bldg., Christopher Street
New York 14, N. Y.

Regional Director
Third U. S. Civil Service Region
Customhouse
Second and Chestnut Streets
Philadelphia 6, Pa.

Regional Director
Fourth U. S. Civil Service Region
Temporary "R" Building
4th Street and Jefferson Drive, S.W.
Washington 25, D. C.

Regional Director
Fifth U. S. Civil Service Region
5 Forsyth Street, N. W.
Atlanta 3, Ga.

Regional Director
Sixth U. S. Civil Service Region
Post Office and Courthouse Bldg.
Cincinnati 2, Ohio

Regional Director
Seventh U. S. Civil Service Region
New Post Office Bldg.
Chicago 7, Ill.

Regional Director
Eighth U. S. Civil Service Region
1114 Commerce Street
Dallas 2, Texas

Regional Director
Ninth U. S. Civil Service Region
New Federal Building
St. Louis 1, Mo.

Regional Director
Tenth U. S. Civil Service Region
Bldg. 41, Denver Federal Center
Denver, Colo.

Regional Director
Eleventh U.S. Civil Service Region
302 Federal Office Bldg.
First Avenue and Madison Street
Seattle 4, Wash.

Regional Director
Twelfth U.S. Civil Service Region
128 Appraisers Building
630 Sansome Street
San Francisco 11, Calif.

It would also be helpful for field officials to advise their Regional Administrative Offices of the names of interested students so that those offices may follow up and expedite desirable appointments. We expect to have more student trainee positions than the number of meteorology,

climatology, and hydrology students who will apply and for this reason we plan to give summertime appointments to many students who are majoring in physics, math, or some field of engineering. This latter group of students has excellent potential for summertime employment and we hope that many of them will be attracted to a career in meteorology with the Weather Bureau.

(c) Encouragement of students at high school and junior high school levels in the study of meteorology. The Weather Bureau is working on a positive program which we hope to implement within the next six months to assist in carrying this out. Many field officials have been promoting careers in meteorology in this manner and we hope that they will continue their efforts.

(d) Increased scholarship opportunities for Bureau employees. Under the new training legislation passed by the last Congress, it is possible for the Bureau to send additional numbers of employees to universities for meteorology training. A call for scholarship candidates for the school year beginning next fall has already been distributed.

Weather Bureau Ozone Program

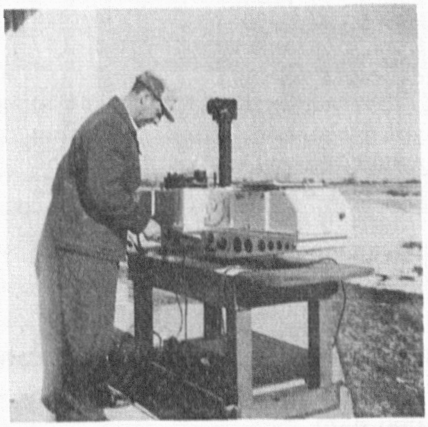
THE meteorologist's interest in ozone, one of the micro gases of the atmosphere, has increased greatly during recent years.

The ozone molecule, an allotropic form of oxygen, consists of three oxygen atoms. It is represented by the chemical formula O_3. Ozone is a powerful oxidizing agent, attacking rubber as well as many other compounds. Even in great dilution, it is irritating to inhale and when more concentrated is highly poisonous.

The concentration of atmospheric ozone near the earth's surface is extremely small, on the average only 3 molecules of ozone to 100,000,000 molecules of air. However, its concentration increases greatly with height reaching a maximum in the stratosphere. It plays an important role in determining stratospheric thermal structure as well as taking part in the dynamic atmospheric processes of vertical motion and horizontal advection. Atmospheric ozone may also serve as a tracer in determining the rate of exchange of air between the stratosphere and troposphere. This knowledge is important in the determination of the rate of fallout of atomic debris injected into the stratosphere by atomic and thermonuclear explosions.

The presence of ozone in the upper atmosphere makes life on earth possible. It absorbs strongly the solar ultraviolet radiation which would be lethal to all forms of life on earth if it were not for this protecting layer. If on the other hand the ozone layer were twice as thick, the ultraviolet light reaching the earth would be so completely absorbed as to interfere seriously with the production of vitamin D, so essential to health.

A great deal of impetus was given to the study of ozone by the International Geophysical Year. However, this short period was not adequate to obtain sufficient data to understand fully the nature of atmospheric ozone and its relationship to atmospheric processes. Our knowledge of the distribution of atmospheric ozone over the United States is meager. In order to obtain more information about this important atmospheric gas, the Weather Bureau is planning to strengthen its ozone observational program. A network of six stations will be established to determine the variation of ozone in large atmospheric vortices. The observational program in the beginning will measure only the total amount of ozone in the atmosphere. Eventually, however, the program will be expanded to include measurements of the concentration of ozone at the earth's surface as well as its vertical distribution.



Harold W. Ebel, Green Bay WBAS, obtaining an ozone observation with a Dobson spectrophotometer.

The total amount of ozone is measured with a spectrophotometer developed by Professor G. M. B. Dobson of Oxford, England. The surface ozone concentration may be determined by chemical methods. A chemical automatic surface ozone recorder developed by Professor V. Regener of the University of New Mexico will be employed for surface ozone measurements. Only recently has it been possible to obtain detailed measurements of the vertical distribution of ozone. This advance in measuring technique is due to the development of an instrument called an "ozonesonde." The ozonesonde may employ either optical or chemical means of ozone detection. Three different types of ozonesondes have been recently developed in the United States and

in Europe.

In order to evaluate and compare these new instruments a joint Weather Bureau - Air Force - Navy project will be conducted at Lowry Air Force Base beginning in mid-April 1959. The tests will consist of 11 high altitude polyethylene balloon ascents, each carrying a train of instruments to 100,000 feet. In addition to the ozonesondes, several flights will include a frost-point instrument developed at the Naval Research Laboratory to determine the water vapor content in the stratosphere as well as an airborne radiometer developed at the University of Wisconsin.

The present Weather Bureau ozone network consists of four stations taking routine observations with Dobson spectrophotometers. The stations are Caribou, Maine; Green Bay, Wisconsin; Bismarck, North Dakota; and Washington, D. C. It is planned to add two more stations in 1959. They will be located at Nashville, Tennessee, and Fort Worth, Texas. Outside the United States ozone observations are taken at Mauna Loa Observatory, Hawaii, and at the South Pole. The Canadian Meteorological Service has ozone spectrophotometers located at Alert, Resolute Bay, Edmonton, and Moosenee.

The study of ozone is ready for tremendous advances in the next few years. With improved instrumentation and with the use of airplanes, rockets, and satellites as carrying vehicles, the collection of ozone data will continue and expand during the coming years. It will then be possible for meteorologists and climatologists to study these data in order to better evaluate the role of ozone in our day-to-day and long-range weather changes.

An Example of Effective Winter Weather Warning Service

ALTHOUGH we always strive to forecast severe weather before it occurs in a certain area, there are occasions when a serious situation may develop with little or no definite advance indications. In such cases, we must continue to guard against considering the situation as a missed forecast without the need of further and immediate action. Some very effective service can be provided even after an unforeseen severe weather situation develops by informing officials and the general public of the intensity, the area affected, and the expected duration of the storm. This service is often best performed by the timely and frequent issuance of local statements.

An example of the appreciation for this type of service was contained in some recent letters received by Mr. John C. Purvis, MIC, WBAS Columbia, S. C. The South Carolina state forecasts issued during the evening of December 10, 1958 gave little indication of the record-breaking snow that began later that night and totalled 7 inches. However, early recognition of the situation and the early-morning briefing of public authorities about the developing storm prompted several complimentary letters from city and school officials. Excerpts follow:

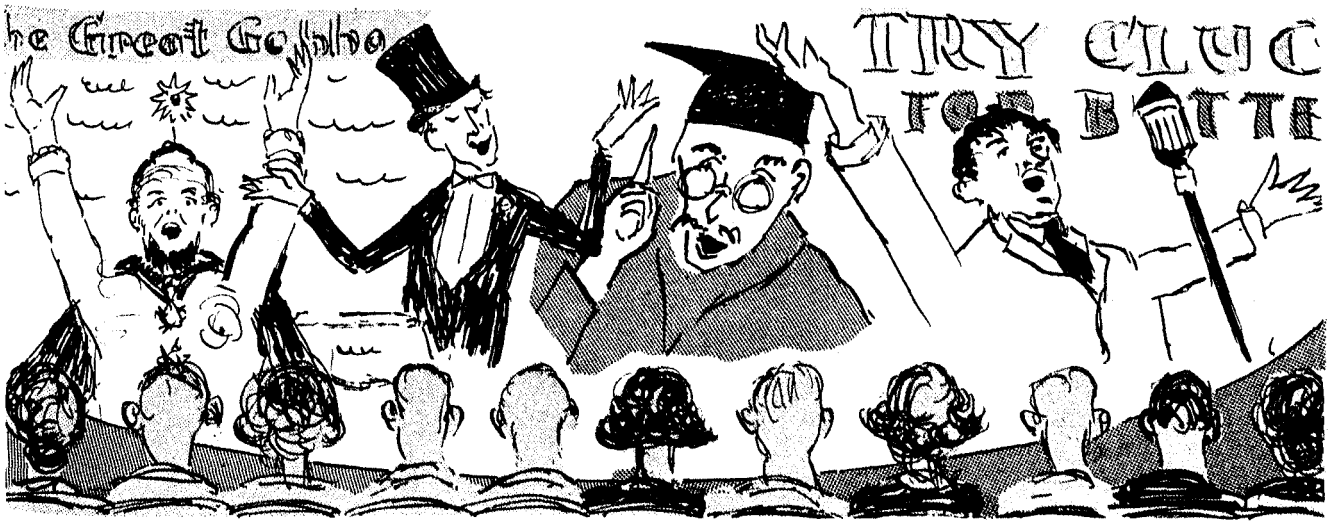
"I am writing to express to you my sincere thanks for being awakened at 5:30 a.m. on the morning of December 11 to be informed about the snow storm. It was the worst storm that I have ever experienced, and your warning made it possible for us to alert bus drivers and students to the fact that it would be impossible to operate schools on that date."

"I also want to thank you for your kindness and cooperation in furnishing me excellent weather service during the recent storm emergency. As a result of your early morning phone call, it was possible to get the machinery of the City underway and thus hold down any greater inconvenience than was suffered by our citizens."

"Will you and your staff please accept our thanks for the fine coverage of all weather conditions and problems during our recent snowstorm. We are grateful for your telephone call relative to the unusual conditions and recommendations therefor as regarding our schools."

"This is to thank you for the prompt and accurate manner in which you kept our schools informed during the recent period of unusual weather in Richland County. I feel sure that your direct and continuous reporting to school administrators of the hazardous weather conditions prevented both parents and pupils, as well as school personnel, from risking the dangers of such inclemency."

There have been many other instances demonstrating the great importance of promptly recognizing the early development of a severe weather condition, whether previously forecast or not. The issuance of appropriate bulletins and follow-up statements will help both the general public and community officials to take appropriate action.



Are You Making The Sale?

EVERY day you engage in such activities as briefing pilots on route weather, adapting local forecasts, conducting field trips through the station, or lecturing at a club. From time to time you may also present scientific papers.

Success depends not only on the quality of the information presented, but also on how effectively the information is communicated.

Stop for a minute! Analyze yourself. Do you dread speaking to a group? Do you find it difficult to think on your feet? Do you tie sentences together with "er-uh" or experience unnecessary pauses or coughs? Do your eyes wander while talking? Do you stand straight or slump while briefing pilots? Does your voice sound strained and monotonous or is it warm and full of confidence?

If you have a feeling of pride and satisfaction on each of these points, you are already aware of the importance of this need and no doubt have an effective program of self-development in public speaking.

Otherwise you are in the same boat with most people and need help.

Probably the best instruction in speaking is to speak. This is an important side benefit of active participation in community affairs, church work, and lodge meetings. However, there are certain fundamental instructions which can make the road much easier. Constructive criticism will point the way.

Why not plan some type of speech training now? There are courses available at schools and in many local organizations.

Remember, you are Mr. Weather Bureau whenever you speak to the public.

Dividends from WB-University Cooperation

FEBRUARY 1944 marked the start of a cooperative program between the Weather Bureau and Iowa State College which is continuing to grow and improve. The purpose was to develop analytical principles and techniques applicable to the field of meteorology generally and more specifically, to the solution of practical problems in agriculture, industry, and commerce. The number of articles which has resulted from this cooperative effort is one measure of its effectiveness. At last count it had directly or indirectly produced 62 papers.

Some meteorologists may be surprised at this number and wonder why they have seen so few. The answer is very simple. Much of the work has appeared in publications of interest to people concerned with the effects of weather and climate rather than with weather per se. (Many meteorologists would be amazed at the extent and variety of such publications.) For example, 6 articles appeared in the Iowa State College Journal of Science and 6 were published in the Agronomy Journal, but only 2 appeared in the Bulletin of the American Meteorological Society.

Subjects covered have ranged from meteorological instruments to the phenology of corn and from soil and plant temperatures to soil moisture and evapotranspiration. Many articles were of a popular nature intended primarily to inform

the public on methods and advances in and new applications of meteorology.

Since the weather plays such a dominant role in determining the behavior of plants, it is not at all surprising that Iowa, which leads the nation in many types of agricultural production, should be engaged in research to gain a more precise knowledge of the effects of weather on crops. Iowa agriculture has undoubtedly benefited from the efforts of the climatologists at Iowa State College.

Programs are underway in many other States, and, while perhaps not as prolific as the one in Iowa, progress is being made. Agriculturally beneficial, as well as harmful, weather events are being measured and their effects determined. Long range planning in agriculture is being more and more based on facts and figures as the climatologists provide concrete information on significant weather events.

The following list contains a few of the articles from Iowa State which were selected to show their general range and scope:

Shaw, R. H. and Waggoner, P. E. An evaluation of dew point fluctuations in the microclimatic layer. Bull. Amer. Met. Soc. 31:382-384. 1950.

Shaw, R. H. You can figure your fall freeze hazard. Iowa Farm Science, August 1957.

Shaw, R. H. and Thom, H.C.S. On the phenology of field corn, silking to maturity. Agron. Jour. 43:541-546. 1951.

Waggoner, P. E. and Shaw, R. H. Temperature of potato and tomato leaves. Plant Physiology 27:710-724. October 1952.

Waggoner, P. E. and Shaw, R. H. Stem and root temperatures. Phytopathology. 43:317-318. 1953.

Denisen, E. L., Shaw, R. H. and Vance, B. Effect of summer mulches on yields of everbearing strawberries, soil temperatures and soil moisture. Iowa State College Journal of Science. 28:167-174. November 1953.

Shaw, R. H. Leaf and air temperatures under freezing conditions. Plant Physiology. 29:102-104. January 1954.

Shaw, R. H., Thom, H.C.S. and Barger, G. L. The Climate of Iowa, I. The occurrence of freezing temperatures in spring and fall. Special Report #8. Iowa State College. August 1954.

Shaw, R. H. Comparison of dew duration on Duvdevani dew gauges and several crop covers. Scientific Report #1. Contract A. F. 19(604)-589. September 1954.

Shaw, R. H. The measurement of soil temperature. Iowa State College Journal of Science. 30:255-261. November 1955.

Shaw, R. H. A comparison of solar radiation and net radiation. Bull. Amer. Met. Soc. 37:205-206. May 1956.

Shaw, R. H. and Runkles, J. R. Soil moisture and water utilization in Iowa. Agron. Jour. 48:313-318. July 1956.

Shaw, R. H. and Barger, G.L. The amount, distribution and disappearance of rainfall in Iowa. Chapter 1. Iowa Water Resources, edited by Timmons, O'Byrne and Frevert. Iowa State College Press. 1956.

Shaw, R. H. and Doll, C. C. Variation in minumum temperatures on a half-mile slope and their effect on peach trees. Iowa State College Jour. of Sci. 32:63-69. 1957.

Shaw, R. H. and Elford, C.R. Clouds - The signposts of the sky. Farm Science, June 1958.

Barger, G. L. How much rain makes corn? Iowa Farm Science, June 1949.

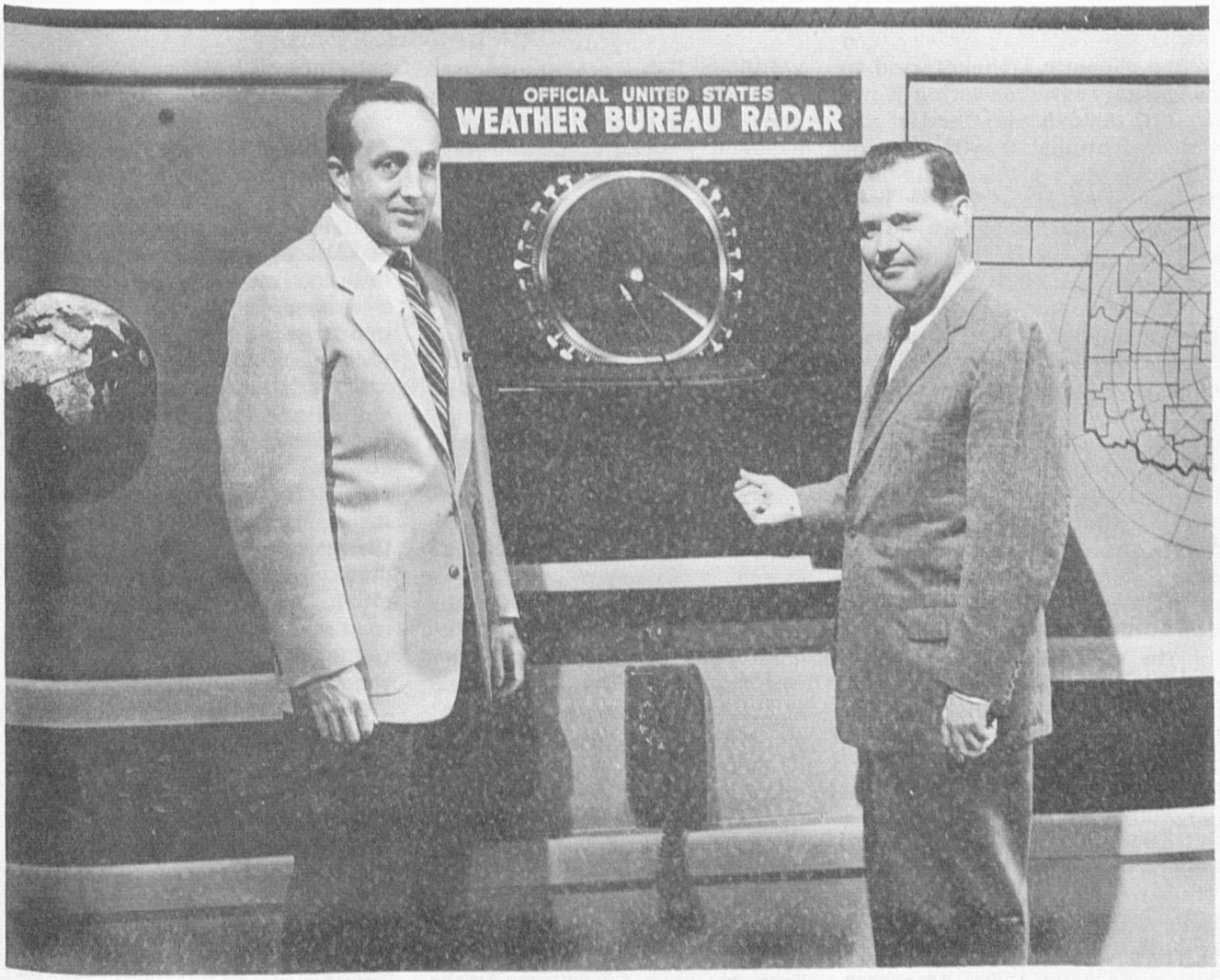
Weather Radar Scope Telecasts

THE showing of weather radar scope presentations on television weather programs is being done by a dozen stations. Public acceptance has been favorable.

The pioneer weather radar telecasting station is WLWT in Cincinnati, Ohio, which had purchased its own radar for television presentation of weather echoes directly from the radar scope two years ago. Following the example of WLWT, television stations WFAA, Dallas, Texas; KICD, Spencer, Iowa; WBRZ, Baton Rouge, Louisiana; WWIL, Ft. Lauderdale, Florida; and WMT, Cedar Rapids, Iowa, installed their own radars. Early in 1958, KWTV, Oklahoma City, Oklahoma joined the stations telecasting their radar scopes. Within the past few months, television stations WBAL, Baltimore, Maryland; WBKB, Chicago, Illinois; and WCCO and KSTP in Minneapolis, Minnesota, have installed their own radars.

Without incurring the expense of installing its own radar, WKY, Oklahoma City, Oklahoma, inaugurated radar telecasts on an experimental basis in March 1958 by "tapping" the Weather Bureau's radar. WKY has its television pick-up camera on a repeater scope at the WBAS Oklahoma City, with a micro-wave link to its studio. The photograph shows the scope presentation in the television studio.

As word of the public acceptance of weather radar scope telecasting spreads through the television industry, other television stations may approach their local Weather Bureau offices for the installation of television pick-up



Bob Thomas and Wally Kinnan, Staff Meteorologists of WKY-TV Oklahoma City, Okla., at the radar scope in television broadcasting studio.

cameras on radar repeater scopes as is being done at Oklahoma City. Station officials can inform prospective users that the Weather Bureau is glad to cooperate in the telecasting of radar scope images whenever this will help provide a more useful information service to the public.

Detailed information concerning cooperative arrangements will be given in the forthcoming Circular Letter No. 2-59.

Naming of Hurricanes 1959

THE list of girls' names selected for use in 1959 for the naming of hurricanes in the Gulf of Mexico, Caribbean Sea, and Atlantic Ocean is as follows: Arlene, Beulah, Cindy, Debra, Edith, Flora, Gracie, Hannah, Irene, Judith, Kristy, Lois, Marsha, Nellie, Orpha, Penny, Quella, Rachel, Sophie, Tanya, Udele, Vicky, Wilma, Xcel, Yasmin, Zasu.

Each year the Weather Bureau receives many inquiries and suggestions concerning the use of girls' names for hurricanes. The overwhelming majority of these letter writers want the present hurricane naming system continued, although some have suggested alternative identification systems.

Suggestions have been made that we designate hurricanes by numbers (1-2-3), by English letters (A-B-C), by Greek letters (Alpha-Beta-Gamma), by boys' names (Arthur-Ben-Christopher),

by the phonetic alphabet used by our military services during World War II (Able-Baker-Charlie), by the International Civil Aviation Organization's phonetic alphabet (Alfa-Bravo-Coca), by the names of animals (Antelope-Bear-Coyote) or by descriptive adjectives (Annoying, Blustery, Churning).

The complete list of suggestions received covers a wide range from little-known mythological characters and historical personalities to well-known people, places and things.

A great many letters also have been received from feminine writers who heartily endorse the Anna, Betsy, Carla system of identifying hurricanes. Many girls have offered their names for use in future hurricane lists.

The Weather Bureau appreciates these friendly expressions of interest in its warning services and in the naming of hurricanes. Those who have asked for general background information on the purposes of hurricane designation systems may find the following notes of interest.

For several hundred years many hurricanes in the West Indies were named after the particular saint's day on which the hurricane occurred. Mr. I.R. Tannehill describes in his book "Hurricanes" the major tropical storms of recorded history, and mentions many hurricanes named after saints. For example, there was "Hurricane Santa Ana" which struck Puerto Rico with exceptional violence on July 26, 1825, and "San Felipe" (the first) and "San Felipe" (the second) which hit Puerto Rico on September 13 in both 1876 and 1928.

The first written mention of the naming of storms after living girls, as practiced by some forecasters when studying weather charts, may have been in the novel "Storm" written by George R. Stewart, and published by Random House in 1941. During World War II this practice became more widespread in weather map discussions among forecasters, especially by Air Force and Navy meteorologists who plotted the movements of storms over the wide expanse of the Pacific Ocean.

It soon became evident that the use of girls' names, in written as well as in spoken communications, was shorter, quicker, and less confusing than the older more cumbersome latitude-longitude identification methods. These advantages were especially important in exchanging detailed storm information between hundreds of widely scattered stations, airports, coastal bases, and ships at sea.

It also became evident that the use of easily remembered names greatly reduces confusion when two or more tropical storms occur at the same time. For example, one hurricane can be moving slowly westward in the Gulf of Mexico, while at exactly the same time another hurricane can be moving rapidly northward along the Atlantic Coast. In the past, confusion and false rumors have arisen when storm advisories broadcast from one radio station were mistaken for warnings concerning an entirely different storm located hundreds of miles away.

Hurricane identifiers should be short, clearly pronounced, quickly recognized and easily remembered. These requirements can be appreciated when one realizes that a single hurricane (such as Hurricane Hazel in October 1954) can prompt millions of additional telephone calls, thousands of additional news bulletins over radio and television stations, numerous newspaper stories, and countless telegrams, written messages, advices, warnings, and oral instructions among the millions of people who may be affected.

Most proposed alternative identification systems do not meet satisfactorily all meteorological and telecommunication requirements for spoken and written messages. For example, letters and numbers, used separately or in combinations, are sometimes difficult to understand in voice communications, or are subject to serious error in repeated written messages, or are reserved for use in other essential service operations.

The names used in alphabetical succession for identifying tropical storms are selected in advance by Weather Bureau, Air Force, and Navy meteorologists. It should be emphasized, however, that the names of particular individuals are not chosen for inclusion in the list of hurricane names.

In the Gulf of Mexico, Caribbean Sea, and Atlantic Ocean area the first hurricane of the year is identified by a girl's name starting with the letter A; the second hurricane is designated by a girl's name starting with B, and so on for all the remaining hurricanes that come along during the year. Rarely are there enough hurricanes in this area, over a single season, to use up more than half of the 26 names in any complete alphabetical list. The record number of tropical disturbances in the Gulf-Atlantic area in one season is 21.

In the Pacific Ocean a somewhat similar but separate naming system is used to identify tropical cyclones of typhoon intensity. Because the Pacific has a much larger number of tropical storms each year four sets of girls' names are used, and in a continuous fixed sequence without regard to the calendar year or season. The first typhoon in the Pacific during each season is assigned the name directly following the last name used during the previous season. When all 84 names have been used, the entire Pacific list is repeated again starting with the first name in the first set.

Blue Canyon Airport

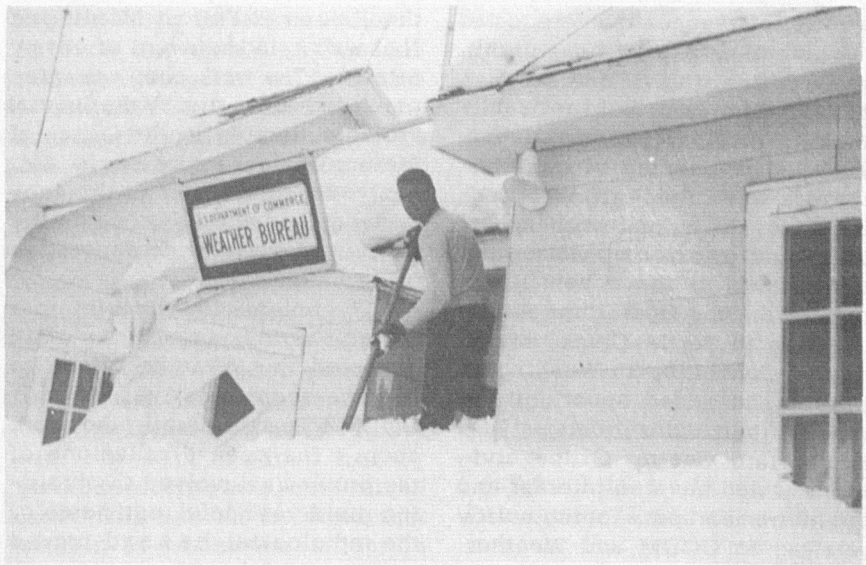
by Richard E. Hambidge

THE Weather Bureau Airport Station, Blue Canyon Airport, Emigrant Gap, California is situated on the western slope of the Sierra Nevada, elevation 5280 feet, midway between Reno and Sacramento. U.S. Highway 40, a main transcontinental link, one half mile from the station, affords convenient transportation facilities.

The historic Donner Trail passes within a mile of the station, winding its way down Bear Valley to the Sacramento Valley. As the snow raised havoc with the Donner Party in 1846, more recent years have also had near major catastrophes due to great snow depth. In 1952, with 155 inches of snow on the ground at the station, and greater depths nearer the summit, the passenger train, City of San Francisco, was engulfed by drifts and slides. Again in 1958, with 106 inches of snow on the ground at the station, trains were stalled and the highways blocked for several days. In each of the above cases, it was necessary to elevate the weighing rain gage to keep it from the grasp of the increasing snow depths. During such periods the automobiles are tucked away in the station's four-car garage and transportation facilities become skis and snowshoes, with a snow shovel part of the attire.

The station program consists of airway observations with three and six hourly additive data eight hours a day. Throughout the remaining 16 hours, the recent installation of an automatic weather station facility records and transmits observations. Existing conditions over the Sierra Nevada and rainfall-runoff data for Sacramento Valley points of interest are of primary importance.

Many compliments are received on the attractive yard of flowers, rockwork, and lawn that



Office building and quarters. Excavating for office daylight.

consume many moments during the growing season. Another point of pride is the station record of observational and punching errors, the least amount in Region IV for the years 1953-1957 inclusive—a tribute to the employee attitude and morale.

Outdoor recreational activities are abundant. Throughout the summer, numerous streams and lakes in the vicinity offer good opportunities for hiking, fishing, swimming, and camping. As fall approaches, the hunting season affords a wide range of game, such as dove, deer, bear, squirrel, quail, porcupine, and mountain lion. Throughout the winter months, with snow depths ever increasing, the Donner Summit area becomes one of the most popular winter sports areas in the west. The site of the 1960 Winter Olympic Games, Squaw Valley, is 40 miles from the station.

An automobile is considered essential since the shopping districts of Auburn, Grass Valley, Nevada City, or Truckee are about 40 miles distant. A small general store, post office, garage, and service station at Emigrant Gap are two miles from the station.

Quarters, fuel, and lights are furnished for approximately $182 per annum. The office and two apartments, one furnished, one partly furnished, are in one building.

WBAS Blue Canyon Airport is a healthful location with clean clear air, attested to by frequent visibility reports of 115 miles.

Insurance Protection for Government Drivers

A number of bills have been introduced in this session of Congress that would protect Federal employees who drive Government vehicles from damage suits arising in accident cases.

The proposed legislation would make the Government solely liable, thereby relieving employees from having to defend such suits and from financial liability judgments.

Conference of WB Consultants to OCDM

THE semi-annual conference of Weather Bureau consultants to the Office of Civil and Defense Mobilization was held in Washington, D. C., January 20-22, 1959. The purpose of this conference was to provide an opportunity for the mutual exchange of ideas and problems among the consultants to the seven OCDM regions and the Operations Headquarters in Battle Creek, Michigan. Convening in Washington offered the added opportunity to discuss particular problems with appropriate Central Office divisions which have an interest and are instrumental in shaping policy relating to OCDM and Weather Bureau relations.

A special feature of the recent conference was a 2-day work shop in the techniques of analysis of radiological data such as the kind that would be made available by the Federal Fallout Monitoring Network in the event of enemy attack. The work shop was prepared and conducted by the Special Projects Section in the Office of Meteorological Research. Dr. Lester Machta, chief of the section, addressed the group on the subject of world-wide deposition of Strontium-90.

The potentially wide interest in radiological analysis work prompted the Weather Bureau to invite representatives of the OCDM to participate in the work shop. The open discussions of the problems involved in obtaining rapid yet useful estimates of the radiological hazard proved very worthwhile.

Although the workshop was primarily experimental, the interest displayed by the participants suggested the possibility of enlarging the scope of the material for future presentation.

The following Weather Bureau employees attended the workshop: Mr. H. R. McQueen, consultant to OCDM Operations Headquarters, Battle Creek, Michigan; Messrs. P. Divver, P. Peridier, J. Scotton, A. Aime, H. Chidley, T. Gibson, H. Laird, and J. McBride, all consultants to the various OCDM Regional Offices throughout the country, and Mr. G. Allen, Civil Defense Coordinator at Washington, D. C.

Representatives from other government agencies were Messrs. H. Ivey, M. Stangler, and D. McLaughlin of OCDM Operations Headquarters, Battle Creek, Michigan, Mr. R. Martin of the OCDM Washington Office, and Mr. W. Armstrong of the Office of Emergency Planning, Department of Commerce, Washington, D. C.

Former MIC Reports on Oswego Snowstorm

MR. ELMER LOVERIDGE, former MIC WBO Oswego, N. Y., has been kind enough to send us the following letter on the December snow emergency in the Oswego area.

"Our snowstorm began about 11 a.m. of the 7th and ended about 5 a.m. of the 11th with some intervals of several hours in which no snow was falling. Locally, this was considered as a single storm. Soon after the beginning of the snow the accumulation of the new snow on the 11-inch depth already on the ground from previous snow became rapid, and at about 1:30 p.m. I remarked at the dinner table that about three inches had already fallen. At that time probably no one in Oswego, including myself, had any idea that the city was in for a siege of heavy snow that would cripple the activities of the city, and as the day was Sunday it is probable that few people paid any attention to the forecasts. On Monday morning of the 8th I waded out into the deep snow with a bamboo pole and measured the depth over my vegetable garden. The depth was marked on the pole and measured by a yardstick in the house. The total depth of snow on the ground at 9:15 a.m. on that date was 44 inches making a total snowfall of 33 inches for the period from 11 a.m. of the 7th to 9:15 a.m. of the 8th. As the snow was continuing it is possible that the maximum snowfall in a 24-hour period was as much as 36 inches as was later estimated according to local newspaper reports. During the storm I made measurements of snowfall at least twice a day and by 8:35 a.m. of the 11th I found that the total snowfall since 11 a.m. of the 7th amounted to 66.7 inches.

"As the streets and driveways were plugged with snow most of the economic and social activities of the city came to a virtual standstill. It did not take householders long to become worried about the load of snow on their roofs and they got their shovels and went right at the job of removing the load. It was soon found that their fears had some justification as news came that many roofs were collapsing. One strong young man who had recently become a home owner not only shoveled off his own roof but shoveled the roofs of his neighbors. People were generally anxious to help others, and the Red Cross was very active.

"Being a retired weatherman I have a great deal of sympathy for

forecasters who are doing their best to warn the public of the approach of severe weather conditions. While, in this case, the forecasters knew that cold air masses moving across the expanse of Lake Ontario were likely to result in heavy snows near the east and southeast shores of the lake they were not certain that such snows would actually occur, and if they would occur it would be impossible to pinpoint the exact area of heaviest snowfall. I think the public, in general, is aware of this situation. In this particular storm I think the forecasters failed in their estimates of wind velocity. According to reports there was some drifting near the lake but, in general, there was very little wind. As the term "snow squalls" implies wind this term was inappropriate for the snows of the storm. The term "snow flurries" would also seem to be inappropriate when moderate or heavy snowfall is expected to occur. I think that this term implies light snow showers in the minds of the public.

"Only a little more than half of this month has passed, and in this early part of the snowfall season some snowfall records have been broken by a wide margin (according to my measurements). These include the greatest snowfall for any month at Oswego. December snowfall to date has amounted to 93.0 inches with the seasonal snowfall amounting to 105.6 inches. The maximum depth of snow on the ground during the month was 50 inches on the morning of the 10th which also broke a record although the water content has undoubtedly been greater on some previous dates. With all of this snowfall Oswego is truly a wonderland at the present time.

"These heavy snows, together with some other rather heavy snows in recent years, have raised grave doubts in my mind that winters are becoming milder in this area although, so far as temperature is concerned, this may be true. Slightly rising winter temperatures and decreasing winter snowfall do not necessarily go together. The factor of weather persistence in forecasting might well be a subject of intense study."

Scientific Papers by WB Authors - 1958 Summary

THE annual production of scientific papers by Weather Bureau authors has more than quadrupled since 1948. Production remained high during 1958 when the Central Office received 205 manuscripts for review. This number has been exceeded only once, by the all-time annual total of 219 manuscripts received during 1957, and is considerably higher than the 5-year average of 185 per year during 1954-1958.

Including some manuscripts left over from 1957, a total of 223 manuscripts were editorially processed by the Central Office during 1958. Of these, 209 were papers prepared for publication. Of the 209 papers, 179 were released for publication, 6 were considered unsuitable, and at the end of the year 24 were back in the authors' hands for consideration of reviewers' comments and suggestions. The 179 papers released for publication exceeded the previous high annual total of 154 during 1957 and far surpassed the 5-year average of 140 per year during 1954-58.

In addition to the 223 papers processed during 1958, Weather Bureau authors offered 87 papers for presentation at national scientific meetings. While this number fell short of the 103 meeting papers offered during 1957, it was still above the 5-year average of 80 per year during 1954-58.

Altogether, 310 editorial actions on scientific papers were taken by the Central Office during 1958. Compared with 296 during 1957 and a 5-year average of 261 per year during 1954-58, this overall total is evidence of a continuing upward trend in the Bureau's production of scientific papers. Many of these papers have appeared or soon will appear in national scientific journals. Each employee who has contributed in this way to meteorological progress and thereby given evidence of his own professional stature and growth is to be commended.

Misunderstanding Words

ARTHUR H. HOSICK, WBAS Cheyenne, Wyoming reports an incident that actually occurred.

"The other morning during the coldest weather in nearly eight years, one of our forecasters snuck away from the phones for a warming cup of coffee. Since the cold wave had been anticipated well in advance and perfectly timed, the mental euphoria that follows a good forecast was almost as warming as the hot java.

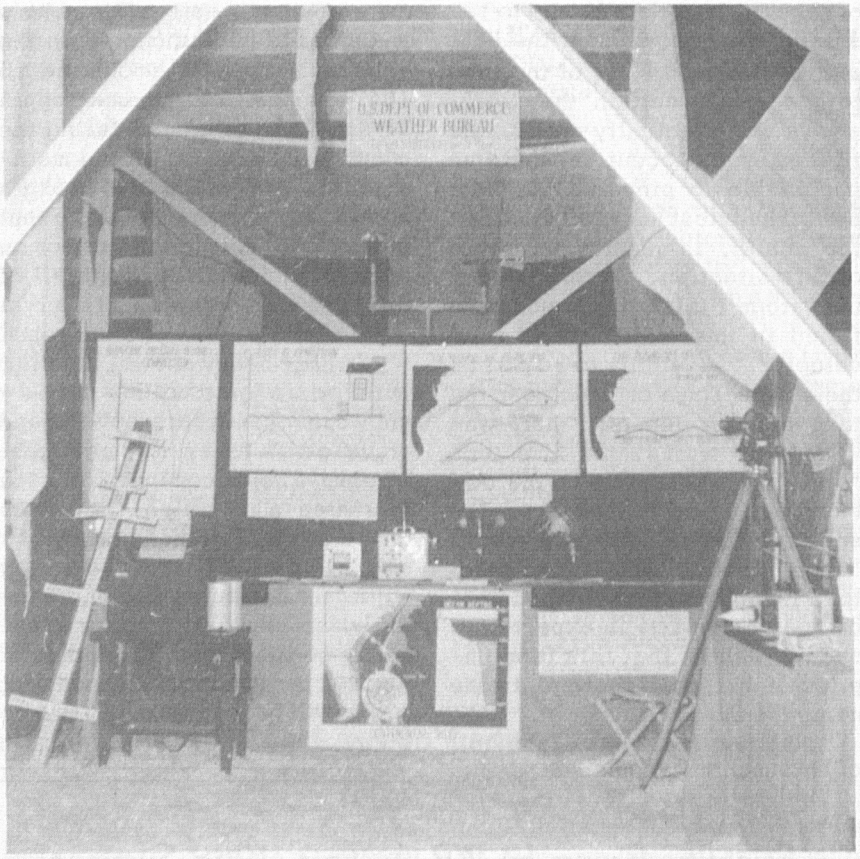
"The only topic of discussion that morning was the cold weather, so our boy was thoroughly disturbed when the milkman next to him commented, 'Well, they missed it again.' The Weather Bureau was obviously the 'they' and the forecaster decided this might be a good time to attempt some missionary work. After the customary amenities, he asked the milkman where he'd received the forecast calling for 'warming,' and the reply was, 'Right there in the morning paper it said, 'warming.'

"After considerable scurrying around, a copy of the morning paper was produced by the waitress. 'See there, the third word.' Sure enough in the usual box at the top of the page was the forecast. It read:
"Cold wave warning continued. Much colder, etc."

WB Exhibit at Charleston County, S. C. Fair

THE Weather Bureau employees at Charleston, S. C. put on a very successful exhibit at the Charleston County, S. C. Fair last fall. By displaying weather instruments, storm display flags, charts showing the importance of the hurricane storm surge, and an operating drop on the Charleston public weather teletypewriter circuit, an effective presentation was possible at no cost to the Weather Bureau. The telephone company installed and furnished the teletypewriter machine without charge. MIC, John A. Cummings and the following members of the staff contributed about 150 hours of uncompensated time to set up and operate the exhibit:

Polly Black
Anna C. Blyth
Eugene J. De Veaux
Robert G. Ehrhart, Jr.
Annie L. Gale
Walter Richmond Hall
Moses A. Lopez
Theodore L. Ogilvie
Samuel K. Parrish
Howard Ulsh
DeRenne U. Whitlatch



Efforts such as those put forth by WBAS Charleston, S. C. do much toward carrying out a good public relations and education program. The Central Office will always be glad to cooperate in any way it can in such projects.

Notice to Indefinite and Temporary Employees

IN accordance with Public Law 85-847 any temporary or indefinite employee (or former employee) has eligibility for conversion or reinstatement to a career or career-conditional appointment if he meets all of the following conditions:

a. On November 10, 1955, he was serving in the excepted service in a position listed under Schedule A or B of Civil Service Rule VI which was removed from the competitive service subsequent to January 23, 1955;

b. He served in a position or positions in the competitive service without break in service from January 23, 1955, to the date his position was listed in Schedule A or B;

c. (1) During the period beginning June 3, 1950, and ending January 23, 1955, he passed a qualifying examination for a position in which he served during such period, or (2) prior to November 26, 1959 he meets such noncompetitive examination standards as the United States Civil Service Commission shall prescribe for the position held when it was listed in Schedule A or B;

d. He has completed, prior to November 10, 1956, a total of continuous or intermittent satisfactory service aggregating not less than three years on the rolls in a position in or under the Federal Government or the municipal government of the District of Columbia. (Instructions under Paragraph III of D.C. 818 will be followed in computing the three years of service, except that credit is not restricted to service in competitive positions); and

e. He files application with

the Civil Service Commission between November 25, 1958 and November 26, 1959.

Employees who believe that they meet the above requirements should contact Chief, Personnel Management Division, in the Central Office, Room 118, for further information and applications.

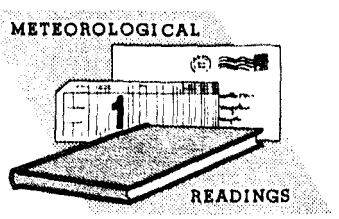
WEather 1212 Sets New Record in 1958

IN the 11 cities where recorded weather forecasts are made available by the telephone companies to those who dial the correct weather number, over 187 million calls were recorded in 1958. This is an increase of over 5 million calls above the previous year, and a new all-time high for this public service.

During the year New York City set a new high with a total of 32,634,852 calls; Detroit was second high with 31,733,830 calls. The high day for the year was recorded at the New York City installation on March 20 when 313,455 calls were recorded; Detroit's high day was 306,195 calls on February 17; and the high day at Washington, D. C. was 304,885 calls on December 11. Hurricanes had little effect on the calls to the automatic telephone forecast service during 1958, when property damage was mainly from Hurricane "Helene" along the North Carolina coast in September. Many more calls were placed to WE-1212 on days of extremely hot and cold weather, and on days when the weather was bad.

City	Annual Total	Highest Day	Highest Date	Monthly Average	Daily Average
Baltimore	8,702,206	103,689	Feb. 15	725,184	23,842
Boston	7,154,777	121,732	Dec. 11	596,231	19,602
Chicago	22,386,216	242,524	Dec. 9	1,865,518	61,305
Cleveland	20,505,250	217,535	Feb. 17	1,708,771	56,179
Detroit	31,733,830	306,195	Feb. 17	2,644,486	86,942
Milwaukee	13,749,574	126,103	Feb. 16	1,145,798	37,670
New York City	32,634,852	313,455	Mar. 20	2,719,571	89,411
Philadelphia	16,406,294	166,318	Feb. 17	1,367,191	44,949
Pittsburgh	8,268,471	101,379	Feb. 17	689,039	22,653
San Francisco	3,761,280	39,487	Apr. -	313,440	10,305
Washington, D. C.	21,751,057	304,885	Dec. 11	1,812,588	59,592
	187,053,807				

The daily average for all installations for 1958 is 46,589 calls.



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXII: Local Winds by Friedrich Defant, on pages 655 through 672, of the Compendium of Meteorology.

About the Assignment: The various types of local winds are described and their origin discussed. One of the major refinements that the local forecaster can make in the general forecast is the addition of the "Local Winds" influence to the overall prevailing wind forecast given by guidance centers.

QUESTIONNAIRE

Col. 61 What are most local winds called?

1. Geostrophic
2. Eulerian
3. Gradient
4. Antitriptic

Col. 62 Under what conditions does the upper boundary of the land-sea breeze circulation rise?

1. with increased friction and increased Coriolis force
2. with decreased friction and increased Coriolis force
3. with increased friction and decreased Coriolis force
4. with decreased friction and decreased Coriolis force

Col. 63 The arrival of the sea breeze is more sudden and violent under the following conditions

1. the gradient wind is in the same direction as the sea breeze thereby reinforcing it

2. the gradient wind is in the opposite direction to the sea breeze

3. the gradient wind is parallel to the shore with low pressure to the left

4. the gradient wind is parallel to the shore with low pressure to the right

Col. 64 Mountain and valley winds are usually best developed under the following conditions and locations

1. on the northerly slopes of mountains due to greater nighttime cooling

2. on the projecting ridges between deep valleys

3. in ravines and gullies on the southern slopes of mountains

4. about 300 meters above the sloping sides of mountains where there is less retardation due to friction

Col. 65 In this article, slope winds differ from valley winds in the following manner

1. slope winds reverse their direction from day to night while valley winds always blow from the valley to the hills

2. slope winds blow uphill during the day and down hill at night while valley winds do just the opposite

3. the slope wind is a more local wind blowing up or down each slope while the valley wind often fills the entire valley

4. late at night (just before sunrise) slope winds reach their maximum value while valley winds become very weak by then

Col. 66 The chief characteristics of the arrival of the foehn wind at a spot are

1. the wind shifts to a westerly or southwesterly direction strong and gusty and the temperature falls rapidly

2. the temperature and dewpoint both fall rapidly while the wind increases

3. the wind increases, the temperature rises and the dewpoint falls

4. the dewpoint rises, the temperature falls, and the wind becomes strong and gusty

Col. 67 The Chinook winds in North America as well as the foehn of Europe are accompanied by the following isobaric pattern over the mountains

1. sea level isobars parallel to the mountains with low pressure on the Chinook side and high pressure on the other side

2. sea level isobars parallel to the mountains with low pressure on the windward side and high pressure on the Chinook side

3. sea level isobars perpendicular to the mountains with low pressure to the left and high pressure to the right of the direction of the wind

4. sea level isobars perpendicular to the mountains with low pressure to the right of the wind and high pressure to the left of the wind direction

Col. 68 The cold air mass which precedes most foehn winds is disposed of in the following manner

1. the turbulent rapidly moving winds of the foehn push the cold air away

2. the cold air moves out of the region due to the pressure gradient in the cold air

3. solar insolation heats the cold air so it can more easily move over the mountains

4. the latent heat of condensation on the windward side of the mountains is used to warm up the cold air mass before the Chinook arrives

Col. 69 The Bora is best described as follows

1. a warm dry fall wind due to air passing through a small opening in a mountain range

2. a very cold gusty wind blowing up through a small pass in between two mountains

3. a fall wind which falls great distances from the mountains to the sea thereby creating destructive gales at the sea surface

4. a wind similar to the foehn except that it is unusually cold to begin with and only falls a relatively small distance thereby remaining much colder than its environment

Col. 70 The Mistral is best described as follows

1. a cold fall wind of small depth originating in Southern France

2. a Bora type wind combined with a deep cold fresh polar or arctic wind moving through a restricted opening between mountain ranges

3. a shallow but intensely cold air mass similar to the "Texas Norther."

4. a purely drainage wind down the slopes of the Pyrenees into the Gulf of the Lion

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Preventive Maintenance Guide—Office Equipment

PREVENTIVE maintenance simply means the proper and routine care of office equipment in order to extend its useful life and appearance. Replacement requirements automatically become more infrequent when preventive maintenance practices are followed.

A good maintenance program results in substantial monetary savings, better working conditions, and reduces the loss of productive man-hours. Major repairs to office machines, furniture, and rugs can be avoided by scheduled inspections to detect minor breaks, excessive wear, and weak or defective spots.

Preventive maintenance is not effective unless each individual assumes responsibility for conservation of equipment. The following can be used as a guide toward the accomplishment of effective preventive maintenance on office equipment.

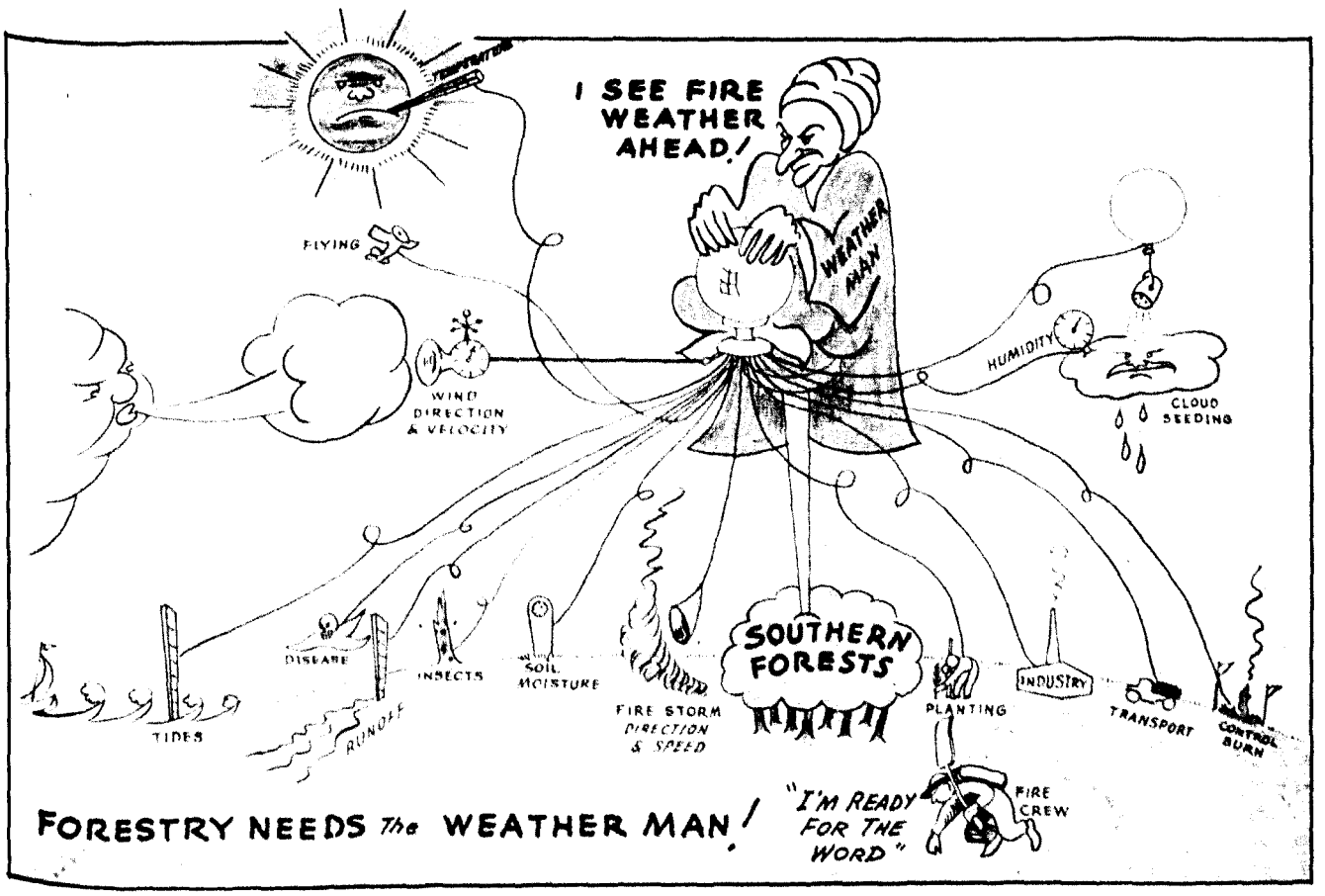
Office Machines

1. Clean machine regularly
2. Cover machine when not in use
3. Do not place machine on defective stand, table, or desk platform
4. Report defective electrical cords and outlets immediately
5. Wipe platen with alcohol and lint free cloth daily
6. Oil standard typewriter lightly at least once a week with lint free cloth
7. Move typewriter carriage to right or left before making erasures
8. Special care should be exercised in the care and operation of electric typewriters
9. Remove electrical plug from typewriter before leaving
10. Select properly inked ribbon for best results
11. Center carriage and grip beneath frame when moving typewriter

Office Furniture

1. Prevent damages from lighted cigarettes, cigars, or hot fluids
2. Lubricate swivel chair mechanisms
3. Repair defective drawers immediately
4. Remove spilled beverages, ink, and other liquids immediately
5. Polish furniture monthly
6. Do not overload filing cabinets or remove slide compressor
7. Remove heavy contents from file cabinets and desk drawers before moving
8. Store furniture with padded paper, blankets, or other protective covering
9. Clean leather furniture with saddle soap at least every six months
10. Use metal furniture in damp areas
11. Move furniture with extreme care using pads and other protective covering
12. Prevent scratches and other abuse from shoes, ash trays, paper weights, etc.

THE following cartoon was drawn by the Staff Artist of the Louisiana Forestry Commission. It was sent to Berne P. Hughes, MIC, WBAS Shreveport, La. as a get-well card during his recent illness.



Superior Accomplishment Awards

James H. Lucas

JAMES H. LUCAS, Clerk in the Administrative Operations Division of the Central Office, was awarded $200 in recognition of outstanding performance in providing messenger, mail, and related services at Suitland.

Mr. Lucas has carried out a variety of duties during the past two years in representing the General Services Section, for which he has been commended by representatives of every Weather Bureau unit located at Suitland. He has made a significant contribution to the efficiency of Weather Bureau operations, as well as maintaining cordial relations with Census, Air Force, Navy, and the Public Buildings Service at Suitland. His competent handling of assigned tasks, high devotion to duty, willingness to perform many tasks outside the responsibilities of his position, and his ability to develop procedures and solve problems in connection with his work with a minimum of supervision were important considerations in granting his award.

John C. Nyhan

JOHN C. NYHAN was awarded $200 in recognition of his excellent work at the National Weather Records Center.

Mr. Nyhan is employed as a Meteorological Aid in the Climatic Analysis Section, where he has made important contributions during the past several years, many of them over and above his position requirements. He has displayed unusual ability and initiative in devising techniques to increase the efficiency of operations at the NWRC. Typical of his efforts along these lines is a manual he assembled for training personnel at the Center in observational procedures. Since the quality and quantity of data processed depend to a great extent on the experience and training of the employees handling the data, Mr. Nyhan saw a need for training personnel who had no prior experience in weather observing and reporting practices. He designed a manual to meet this need and further contributed by participating as an instructor in the training program. Mr. Nyhan's excellent day-to-day performance and his alertness and initiative in improving operations have contributed significantly to the effectiveness of the NWRC program.

Rose M. Casey

ROSE M. CASEY, Clerk-Stenographer, was awarded $100 in recognition of her highly competent performance of duties at the Weather Bureau Office in Boston.

In addition to outstanding performance of administrative and stenographic tasks, Miss Casey assumes responsibilities that would otherwise require the attention of professional personnel. Particularly noteworthy is her interest in public relations, which has aided in creating and maintaining a very favorable impression of the service rendered by WBO Boston. Miss Casey has received "Outstanding" performance ratings for the past four years.

Genie S. Bartlett

GENIE S. BARTLETT, Meteorological Aid in the Office of Climatology until her retirement August 31, was awarded $200 in recognition of sustained outstanding performance in the Domestic Area Section.

In carrying out her duties in the compilation of facts, references, and meteorological information used in publications and in answering requests for climatological data, Mrs. Bartlett has consistently demonstrated a high degree of initiative, industry, cooperation, and efficiency, often performing tasks considerably above her position requirements. She has compiled and organized considerable valuable information for publication and is author of an article which appeared in the December 1956 Weekly Weather and Crop Bulletin, as well as co-author of two others. Because of her thorough and remarkably accurate work, she was often called upon to assist in other sections of the Office of Climatology, and in each case her excellent work and careful attention to detail resulted in important contributions to the assigned project.

Marshall M. Richards

MARSHALL M. RICHARDS, Hydrologist, Knoxville, was awarded $300 in recognition of extremely competent performance of duties for the past 12 years. Shortly after entering the Bureau in 1946, Mr. Richards was selected to serve on the staff at the Cincinnati RFC. His technical ability resulted in excellent leadership in directing the staff in the application of hydrologic principles; his resourcefulness in developing operational procedures was instrumental in the successful establishment of the Bureau's RFC-RDO program; and his competence in forecasting was ably demonstrated during flood emergencies. In 1951 he was chosen to head the new River Forecast Unit at Knoxville which was established to develop forecast schemes and issue river forecasts to the TVA. He has continued to demonstrate a high degree of professional competence, representing the Bureau most creditably in this assignment.

Old Timer, Still Interested

U. S. Weather Bureau
Buffalo, New York

Dear Sir:

This writer is interested in learning the date of a severe storm that passed into the lower Saint Lawrence River in the spring of 1912. This storm had a low pressure center of below 29.15 inches. I would say it occurred in either March or April of that year.

It happens that I was an observer on the Buffalo station at the time, and, being the only member of the staff not a native of Buffalo, I had the night "trick."

The "trick" consisted of the evening observation, 8 P.M. E.S.T., making station map A, one chalk plate map from which two casts were made, one for the Buffalo Courier, and one for the Buffalo Express, two very lengthy lists of station temperatures and etc. I had to personally make delivery of these lists and the stereotypes to the newspaper offices....

I possess one of the stereotyped casts which I made that night, and have long been curious to learn the exact date that it was made....

/s/ Myron F. Marsh

Mr. Myron F. Marsh
R. R. No. 2
Gaston, Indiana

Dear Mr. Marsh:

Thank you for writing. I was pleased to look back in the records to check the storm you remembered. I'm not sure that I found it but there was a whopper on February 21-22, 1912. The lowest barometer, according to Frank A. Math who prepared Form 1014 - Daily Local Record - was 28.96 inches at your 7:44 pm observation on the 21st. The wind then was blowing a gale from the east driving snow before it at a temperature of 24°.

It was a two-day storm, heaviest a little farther east. The Weather Bureau got a lot of praise from metropolitan newspapers for having predicted its course and severity so accurately. The New York Times in particular chided people who used the "stupid witticism that the Weather Bureau is always wrong."

/s/ B. L. Wiggin
Buffalo, New York

RETIREMENT

Lula J. Smith

LULA J. SMITH, Clerk-Typist in the Central Office Publications Unit, retired January 31 after more than 15 years of government service.

Born in Monticello, Kentucky, Mrs. Smith moved to Illinois when a young girl. She graduated from Arthur (Illinois) High School and attended Eastern Illinois Teachers College in Charleston, followed by 16 years as a rural school teacher.

Mrs. Smith was employed in private industry from 1926 to 1935, when she married and moved to Washington. She entered the Weather Bureau during World War II, completing 15 years of service January 10, 1959. Her first assignment was in the Security Section of SR&F, and she has since served in the Printing Section, the Library, and the Publications Unit.

Mrs. Smith's husband retired from the Department of Commerce several years ago after more than 36 years of government service. They plan to remain in Washington where friends may contact them at

5833 Sherrier Place, N.W.
Washington 16, D. C.

Walter J. Moxom

WALTER J. MOXOM, Regional Director of Region I when he retired June 30, 1950, died suddenly January 13 at his home in Woolford, Maryland, at the age of 73.

During his more than 45 years of service with the Bureau, Mr. Moxom served in many important assignments, including nine years as Regional Director. The July 1950 TOPICS carried an account of his career. His excellent record of public service and his high personal standards were in keeping with the finest traditions of the Bureau.

Survivors include Mr. Moxom's wife, two daughters, Mrs. Margaret C. Smith of Takoma Park, Maryland, and Mrs. Shirley F. Herman of Silver Spring, Maryland; a sister, Mrs. Calvin Brice of De Quincy, Louisiana, and three grandchildren.

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TOPICS

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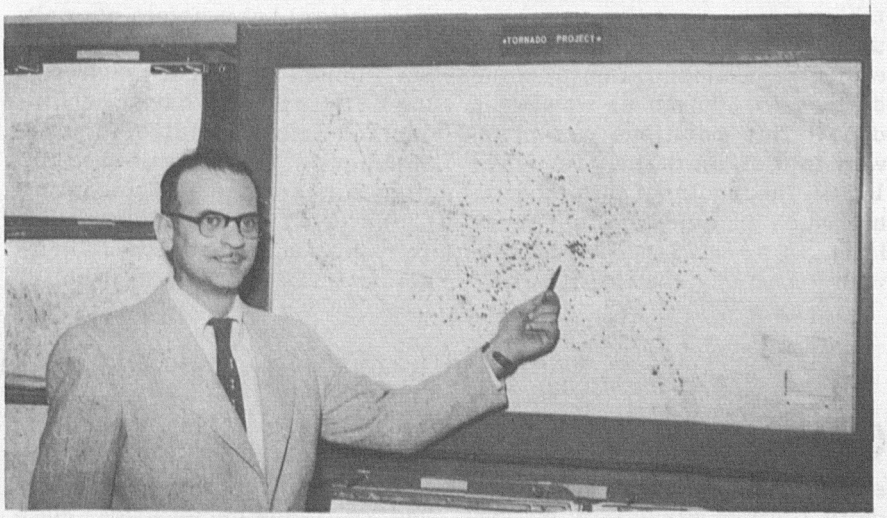
WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through 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.

Head of Unit, SELS Center

Donald C. House



ALTHOUGH the Severe Local Storms Center (SELS) in Kansas City, Missouri, forecasts for one of nature's smallest storms - the tornado - its area of responsibility is large, that of the continental limits of the United States. At one time or another since its inception, SELS has issued tornado or severe thunderstorm forecasts that have included at least a portion of each of the 48 states.

The responsibility of SELS to maintain a continuous watch of the possibility of severe local storm development, the issuance and distribution of convective outlooks nationally, the issuance of public and aviation severe weather forecasts, and operational research to improve these forecasts has been under the direction of Donald C. House for the past four years.

A South Dakotan by birth, he received his Bachelor of Science degree from the South Dakota School of Mines and Technology in 1940, which was followed by a year's graduate study in meteorology at the University of California at Los Angeles. His Weather Bureau career began in Los Angeles in 1941 but was interrupted when called to active duty with the Army Air Corps in the fall of the same year. Four years of service culminated with Lt. Colonel House as Regional Control Officer for the African-Middle East Region of the Air Weather Service. On his return to the Weather Bureau, Don's activity has been varied. He was first assigned to the office of Region V, then in May 1947 was transferred to the Central Office and assigned to the International Aviation Section. While with this section he was a member of the Secretariat of the 1947 Conference of Directors of the IMO, U.S. Meteorological spokesman at the North Pacific ICAO Regional Air Navigation Meeting at Seattle in July 1948, and U.S. Meteorological spokesman at the Caribbean Regional Air Navigation Meeting at Havana, Cuba, in April 1950. Later that year he was transferred to Kansas City as Assistant Regional Director of Region III until 1953 when he was assigned as District Forecaster at Kansas City. He took over his present position in March 1954.

The inheritance of a fledgling unit is at its best a trial to any man, but a unit which had undertaken the task of issuing forecasts of tornadoes and severe thunderstorms on an operational basis, might well scare off the strongest of men. SELS had its beginning in the Analysis Center at Washington, D. C. in March 1952. Under the direction of the Supervising Analyst, district forecast centers were alerted to possible threat areas by telephone. During 1953, SELS became established as a separate unit (with its new title) which issued severe weather bulletins for aviation interests on Service A and, after advising and consulting with the District Forecast Centers, public releases were made by the appropriate district office. After its first full year of operations the potential of SELS was obvious. The SELS Center was transferred to Kansas City in August 1954. This change was made primarily to provide closer contact and more rapid communications among the three forecast centers (Kansas City, Chicago and New Orleans) whose districts included the major tornado areas.

In April 1955 the first convective outlook (AC) was transmitted on Service A for the benefit of all Weather Bureau stations and subscribers to Service A. Up to this time a summary of expected severe weather called "Morning Discussions" was sent via TWX by SELS to selected district forecast offices. The value of these "discussions," especially for airline operations, warranted their distribution nationally. In February 1957 both public and aviation releases originated in SELS.

In March 1954 when Mr. House

became SELS supervisor, his commission was stated simply: improve severe local storm forecasting techniques. He reasoned this could be done by further research and perfection of techniques already in use, and by taking into account the processes through the whole atmosphere rather than concentrating from the surface to 500 mb as was being done. This ambitious program went into effect during the fall of 1954. The results of this program are much in evidence four years later. Some 28 papers dealing with various phases of severe storm forecasting from the surface to the tropopause have been published in the leading meteorological journals by the personnel of the SELS Center. Methods for measuring stability, hail size, turbulence, wind gusts, and the integration of parameters not only at the surface and lower levels but through the upper reaches of the atmosphere have been organized into a reliable forecast technique. This effort led to the first Weather Bureau Forecasting Guide, entitled, "Forecasting Tornadoes and Severe Local Thunderstorms." The improvement in forecasting tornadoes has earned the SELS Center the Silver Medal for Meritorious Service. This progress, although a group endeavor, is identified with the competent leadership of Mr. House.

Don is married to the former Margaret West, culminating a college romance. They have two children, Don, Jr., 5, and Karen, 3. For hobbies he enjoys cabinet making, carpentry and hunting. However, those who have enjoyed the results of his vegetable garden also accuse him of having two green thumbs.

Appreciation in Evacuating Canadian Employee

ON December 14, 1958 Mr. R.F. Sturrocks, a Canadian IGY scientist at Alert, became critically ill and proper care for him presented a rather severe problem to the station personnel. The only solution was to see if arrangements could be made to evacuate him to the Thule Hospital.

Following this initial information which came on Monday morning, December 15, by radio message from Resolute, a telephone call came from Dr. Thomson's office inquiring if arrangements could be made to evacuate the Canadian employee, Mr. Sturrocks.

The Westover Air Force Base and Thule Air Base were contacted and their assistance requested in getting Mr. Sturrocks out of Alert, hospitalizing him and then transporting him to Goose Bay, Canada, if conditions permitted.

Mr. Sturrocks was evacuated from Alert to Thule on December 15 and two days later arrangements were made to fly him from Thule to Goose Bay via USAF aircraft, where a special Canadian plane had been dispatched to meet him. On the flight from Thule to Goose Bay the U. S. Air Force provided a medical officer to accompany Mr. Sturrocks because the situation was so critical.

Fortunately all of these arrangements tied in very nicely and the evacuation was successful. Mr. Sturrocks was delivered without incident to Thule, thence to Goose Bay, and then to a Canadian government hospital in Ottawa. He has since entirely recovered.

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Assistant Secretary Livingston T. Merchant of the State Department sent the following letter to Dr. Reichelderfer:

"I am pleased to bring to your attention the enclosed copy of despatch No. 664, dated January 14, 1959, from our Embassy in Ottawa. This despatch quotes the text of a letter dated January 8, 1959 from the Department of External Affairs, expressing the gratitude of the Canadian Government for the assistance rendered by the United States Air Force and the United States Weather Bureau in evacuating from the Arctic a Canadian employee of the Meteorological Branch who had become suddenly ill.

"I would appreciate your bringing this expression of appreciation by the Canadian Government to the attention of Mr. J. G. Dyer, Chief, Polar Operations, United States Weather Bureau, who assisted in the evacuation operation. I would also like to add the appreciation of the Department of State to Mr. Dyer for his assistance in this emergency situation, since it will undoubtedly contribute to the further strengthening of the close cooperation already existing between Canada and the United States in the operation of the Joint Arctic Weather Stations."

Monthly Weather Review

HAVE you received your bound copy of the Monthly Weather Review?

Unbound copies of the Monthly Weather Review were recalled for binding last July. In mailing to the Central Office some stations failed to include a return address which precluded the return of the bound volumes. Stations that have not received bound volumes in return for unbound copies are requested to forward this information to the Central Office Publications Section.

Hiatt Appointed to U. S. Study Commission

WILLIAM E. HIATT, Chief, Hydrologic Services Division, has been appointed by President Eisenhower to a U. S. Study Commission for Southeast River Basins as a representative from the Department of Commerce. The President pointed out in his letter the unique and challenging opportunity afforded to perform a valuable public service for the Southeast.

Public Law 85-850 establishing the Commission provides for an integrated and cooperative investigation, study, and survey, in connection with and in promotion of the conservation, utilization, and development of the land and water resources of the area; the formulation of a basic, comprehensive, and integrated plan of development of the land and water resources within the area; and recommendations, after adequate study, for executing and keeping current such plan.

Various groups have been organized to make similar integrated and cooperative investigations, studies, and surveys. None of these cooperative groups has been entirely successful in achieving broad, fully integrated land and water resources planning. The Commission has an opportunity to avoid the pitfalls which plagued its predecessors and to provide a calibre of broad, integrated natural resources planning not heretofore achieved. The Commission is unique by virtue of its organizational provisions for Presidentially appointed and Federally paid local members representing the States of the area and having equal status with the representatives of the Federal agencies. The Commission need not be inhibited by traditional agency approaches and loyalties. It has the freedom and flexibility to adopt its own basic approach and to reject those procedures, practices, and criteria which experience has shown to be defective, ineffective, or unworkable. It has complete independence of action which should be guarded. This broad responsibility carries with it an obligation for sound decisions which will provide for the development of the resources of the area in a manner which will assure their maximum sustained use and contribution to the economic growth and welfare of the region.

The 11-man Commission is made up of State representatives from Alabama, Florida, Georgia, and South Carolina and Federal representatives from the Departments of Agriculture, Commerce, Health, Education and Welfare, Interior, Army, and the Federal Power Commission. The Chairman is James W. Woodruff, Jr. of Georgia.

Meteorological Assistance Program in Thailand

SINCE 1951 the U.S. Government, through the International Cooperation Administration (ICA) and predecessor agencies, has been assisting Thailand to improve and develop its National Weather Service. At present, Thailand's meteorological system consists of 49 first-order stations of which two are full-scale forecasting centers, two have limited forecasting responsibilities, three are rawinsonde stations, and eight make pilot balloon observations. Their climatological network comprises over 400 rainfall measuring stations and is currently being supplemented by a number of temperature and evaporation measuring stations. Thailand's weather service is now, and has been since

its establishment in 1936, operated by the Meteorological Department of the Royal Navy and has had the same director, Vice Admiral Charoon V. Bunnag, throughout its existence.

During the first five years of the meteorological assistance program U. S. support, except during 1953, was limited to providing small quantities of instruments and expendable supplies and to the sponsoring of meteorological training at U.S. universities for some of the members of the professional staff. In 1953, the U. S. procured three sets of rawinsonde ground equipment for installation in Thailand. Installation and activation of this equipment, together with initial training of personnel in its operation and maintenance was accomplished by the members of the Weather Bureau, Rufus Gordon and Donald Howard. In FY 1957, the scope of the project was enlarged to include most of the instruments, equipment, and facilities needed for modernizing Thailand's meteorological system and to provide the services of a resident U. S. Meteorologist, James A. Fellgren of the O&SF Division of the Central Office.

Mr. Fellgren has had considerable success, as an advisor to the Thailand National Weather Service, in helping with the modernization program. A large part of this success is due to the outstanding working relationship with Admiral Bunnag. In addition to the inauguration of upper-air soundings, Mr. Fellgren has made the following improvements:

a. A total of 15 participants from Thailand have been trained in meteorology at U.S. universities;

b. Forecast centers have been activated at Bangkok Airport, Chiengmai, and Songkhla;

c. An extensive construction program was conducted during the last two years to provide office buildings, living quarters, and other facilities at Bangkok and outlying stations. The main items were major improvements at 14 airport stations; construction of an instrument shop, a two-story office building, 20 living quarters, a schoolroom, and garage in Bangkok; and construction of complete weather stations at four locations. Rawinsonde buildings and inflation facilities also were possible at Chiengmai and Songkhla;

James A. Fellgren

d. A sizable quantity of meteorological equipment was provided in 1957 and 1958, the largest item being radiosonde expendables. Other major items include a rotating-beam ceilometer, a transmissometer, remote-reading wind, temperature, and humidity measuring systems for Bangkok airport, and a number of raingages, evaporation measuring sets, thermometers, etc.

e. An eight-channel 3XW radio transmitter has been installed at the Meteorological Department in Bangkok for the purpose of making National and Sub-area (VOLMET) weather broadcasts,

f. Facilities, both printing and multigraphing, for the publishing and reproduction of records, maps, circulars and other material have been installed at the Meteorological Department.

g. IBM methods for the processing of climatological data have been introduced,

h. ICAO and WMO procedures have been instituted at Bangkok Airport.

Mr. Fellgren having just completed two years of duty in Thailand is now in the United States on home leave. He will return to Bangkok in April for an additional two years to complete phases of the project already underway. He is accompanied by his wife, Bobbie, who is a former member of the F&SR Division of the Central Office. Mrs. Fellgren has been fascinated by the life in Thailand and has occupied part of her time by teaching English to classes of Thailand Government Officials.

WB Representative at ICAO Regional Air Navigation Meeting

THE Joint Middle East/South East Asia (MID/SEA) Regional Air Navigation (RAN) Meeting, convened by the International Civil Aviation Organization (ICAO) was held at the Headquarters of the Food and Agriculture Organization of the United Nations, Rome, Italy, between January 7 and February 3, 1959.

The Weather Bureau was represented on the 15-member U.S. delegation, which was under the leadership of Mr. Frank H. Fuqua, Deputy Chief ICAO Division of FAA. The meteorological members of the delegation were G. D. Cartwright of the Weather Bureau (who served as spokesman on the MET Committee) and Lt. Col. A.R. Crisi, Headquarters Air Weather Service.

The purpose of the meeting was to prepare, for the considera-

Lt. Col. A. R. Crisi and G. D. Cartwright, Meteorological members of the Delegation.

tion and action of the Council of ICAO, comprehensive plans of the facilities and services necessary for international civil aviation operations for the two regions, which stretch from the Eastern Mediterranean to Melbourne, Australia.

The attention of the Meeting was mainly focused on the introduction, during the next few years, of the most advanced types of turbo-jet aircraft, with a consequent increase in average flying speeds from 250 miles per hour to about 550 miles per hour. This required revisions of the statement of operational requirements on which the current regional plans were based, with particular attention to the needs of jet aircraft and consequential revisions of the various technical parts of the regional plans in order to accord with such requirements. Another major point of emphasis was the organization of airways, control areas, and particularly the upper air space. With operations planned to altitudes of 45,000 feet, many new problems of the organization and operation of the upper airspace, and its coordination with lower control areas, had to be resolved.

An interesting aspect of the meeting was the prominence of meteorologists in the various delegations. Both the Indian and the United Arab Republic delegations were headed by meteorologists. The Indian delegation was under the leadership of Dr. P. Koteswaram who is known to many Weather Bureau staff members, having spent a year at the University of Chicago in graduate study. Mr. M. H. Gidamy headed the United Arab Republic delegation and was also Chairman of the Meteorological Committee. Also, the Secretary General of the meeting was Dr. J. Heierman, former Chief of the ICAO Meteorological Section, and now Chief of the Ground Branch of the Air Navigation Bureau of ICAO. The World Meteorological Organization was represented by Mr. Norbert Veranneman, expert in the Technical Division of WMO Headquarters in Geneva.

The principal problem from the meteorological point of view was the serious inadequacy of the upper air data available for flight

planning. The two regions embrace broad oceanic areas as well as extensive deserts and thick jungle where the establishment of stations is an extremely difficult problem at best. The rather low level of development of some of the meteorological services makes the cost of upper air facilities an almost prohibitive one for certain states. Nevertheless, it was encouraging to see the feeling of urgency which many of the delegates brought to the meeting. If there is any possible way of getting funds and equipment, the impression left in the Committee was that everything would be done to meet the obligations laid down by the meeting.

One of the important technical decisions taken by the meeting was that, for the tropical areas at least, only one upper air sounding was required per day. This point of view was urged most strongly by Australia and the United Kingdom. It was agreed however, that two upper wind observations per day should be considered the minimum for the area. A second point that occasioned much discussion was the area over which hourly reports should be distributed. The United States, attempted to secure distribution over a distance equal to at least 3 hours flying time of a high speed aircraft. This proposal was rejected by the meeting. It settled finally on 2 hours flying time or approximately 1100 miles. Even this figure will cause a considerable increase in the number of hourly reports on communications networks, which are inadequate to handle this amount of traffic. As a consequence, the communications committee had to recommend a substantial increase in the communications facilities for many parts of the region. A third point which could not be resolved was the type of upper air charts which should be used for briefing for high altitude operations. This question is under study by the WMO and will be discussed also at the Fifth Session of the Met Division of ICAO (Second Session of the Commission for Aeronautical Meteorology of WMO) in September of this year.

The consensus of opinion in the delegation was nevertheless that the meeting had been a highly successful one and that most of the questions raised by the U.S. had been met by committee decision. The main question unresolved was that of implementation. Could States find the resources to carry out the recommendations of the meeting within a reasonable period of time? There was such concern over this that a special recommendation was adopted urging greater cooperation among states in solving this common problem.

While the meeting took up the entire working day, with delegation meetings in the evenings, it was impossible to be in Rome without having a sense of the unique historic background of the city. For the U. S. delegation the daily trip to and from the meeting took us by the Colosseum and the Palatine Hills, a constant reminder of Rome's magnificent past.

Length of Service Awards

THE new length of service emblems recently adopted by the Department of Commerce have been distributed to the Regional Administrative Offices, Weather Records Processing Centers, and others responsible for their issuance.

As announced by memorandum to all stations on September 22, 1958, employees completing the prescribed periods of service after September 30, 1958, will be granted the appropriate length of service awards as described below:

15 years - Bronze with white enamel
25 years - Silver with red enamel
30 years - Gold filled with blue enamel
35 years - Solid gold with blue enamel and synthetic ruby
40 years - Solid gold with blue enamel and 2-point diamond
50 years - Solid gold with blue enamel and 3-point diamond

There is no plan at present to issue new-style emblems to employees who have already received the corresponding old-style emblem. However, since the 15, 25, and 35-year emblems are for periods of service not included in the old plan, employees who have qualified for these emblems will be given them provided they have not already received an old-style emblem for the next higher period: that is, for 20, 30, or 40 years of service. For example, if an employee has completed 15, 16, 17, 18 or 19 years of service, he will receive one of the new 15-year emblems.

The new emblem, incorporating a very attractive design recommended by the Civil Service Commission and one that has been chosen by many Federal agencies, provides a much more suitable form of recognition for length of service than has been given by the Department of Commerce in the past.

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Odds Too Great

IF you had 18 million dollars, would you bet it against one dollar that you could toss a ball in the air and catch it? Of course you wouldn't. The odds are all out of proportion to the risk.

But how about this: The average adult of 35 has some 18,408,600 minutes yet to live. Every time he takes a chance behind the wheel he gambles all his remaining minutes.

Distance as a Factor of Radar's Ability to Show a Hook Echo (Weather Bureau's WSR-1 & -3 Radars)

by John Hamiton[1] and Alexander Sadowski[1,2]

THE searching of radar echoes for hooked appendages as a possible indication of a tornado is a common practice of radar operators. For this reason, the following information about hook echoes should prove helpful to the radar operators. On May 24, 1957, a hook echo was observed on a U. S. Weather Bureau WSR-1 radar 24 n.mi. away and not observed on the same echo by the same type of radar 75 n.mi. away. A presentation is given of the reasons for the more distant station not being able to detect the hook on the echo. Photographs of radar scopes at both stations are used.

On May 24, 1957, a tornado moved through two southern counties of Oklahoma leaving a path 1/2 mile wide and 22 miles long. Four persons were killed and several homes completely destroyed.

On the WSR-1 radar at the Weather Bureau Airport Station, Wichita Falls, Texas, the radar echo of the storm associated with the tornado appeared on the Plan Position Indicator scope with a hooked appendage. The PPI scope is a presentation in the horizontal plane. The hook on the radar echo was identifiable for a period of 90 minutes, from 1630 to 1800 CST. Apparently, the hook became visible by 1630 C at 10 n.mi. northwest of the station that coincides with the approximate time of first surface damage. A photographic sequence of the PPI scope of the radar at Wichita Falls showing the hook echo is given in Figure 1.

The hook was formed by the growth of the echo in a cyclonic sense to form a hook in the right rear quadrant of a radar echo moving to the northeast. Also, the hook was on the side of the echo nearest the radar station with no intervening echoes. For the duration of the hook, the echo was within 40 n.mi. of the station.

At the more distant radar station of WBAS Oklahoma City, Oklahoma, and on the same type of radar, a WSR-3, the radar echo associated with the tornado was a bright and sharp indication of a severe storm, but no hook was identified. The hook should not have been evident on the side of the echo away from the radar station at a distance of 75 n.mi. A photographic sequence of the radar PPI scope at Oklahoma City showing the echo associated with the tornado is given in Figure 2.

A close examination of the echo on the Oklahoma City's radar at 1719 CST shows a very intense area in the southwest quadrant of this echo. Careful plotting of the position of the hooked portion of the Wichita Falls echo and the very intense area of the Oklahoma City echo shows a position that is well within the limits of the beam width. Figure 3 shows the location of the radar echoes with their configuration as seen by the two radars. The distance between the center of the hook seen by Wichita Falls and the bright nodule seen by Oklahoma City is about 3 n.mi. and that is good agreement. The tornado's track for the period following the time of Figure 3 is given by the series of dots.

The distant radar station may observe the rapid changes in intensity prior to the development of the hook as seen by a nearby station. By reducing the receiver gain one may make a more precise determination than with those shown in the photograph.

There are three reasons for the hook not being visible on Oklahoma City's radar, namely, beam-width distortion, attenuation and pulse-length distortion. Beam-width distortion is a radar characteristic of presenting on the PPI scope all strong targets, even "point" targets) or greater than, that of the beam. With the WSR-1 beam width of 4°, this "smearing" effect is 2 miles at 24 n.mi. and 6 miles at 75 n.mi. as shown in Figure 4. Inasmuch as the hook is a small phenomenon (3 to 5 n.mi. across), the beam-width distortion obliterates the characteristic hook at long range.

Although attenuation is usually not serious with 10cm. radar, there may be a loss of echo detail when the beam of the low-powered WSR-1 radar must penetrate a huge mass of rain to reach the hook.

Pulse-length distortion is an effect to smear the echo in range in the following manner. When radar is operated on long pulse to maximize its ability to penetrate heavy rain and thereby increasing echo detection, the echo becomes "thicker" in range on long pulse than on short pulse by an amount corresponding to the difference in pulse length (982 feet distortion for one microsecond pulse and 1964 feet for two microsecond pulse).

The conclusions drawn are that hook echoes associated with tornadoes are observable on the PPI scope of WSR-1 & -3 radars when the echoes are fairly close to the station, that is, within about 30 to 40 n.mi., but not at greater distances. The distant radar station may observe the rapid change in intensity of the echo that is

(See center spread)

MIC, WBAS Oklahoma City, Okla.[1] F&SR Central Office [2]

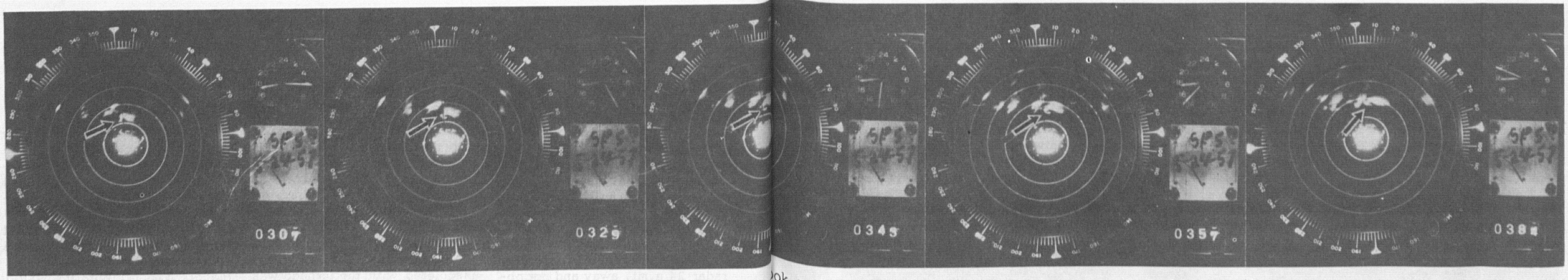


Figure 1. Photographic sequence of PPI radar scope, Wichita Falls, Texas, showin[illegible]ook echo associated with tornado of May 24, 1957. (20 n.m. between range markers.)

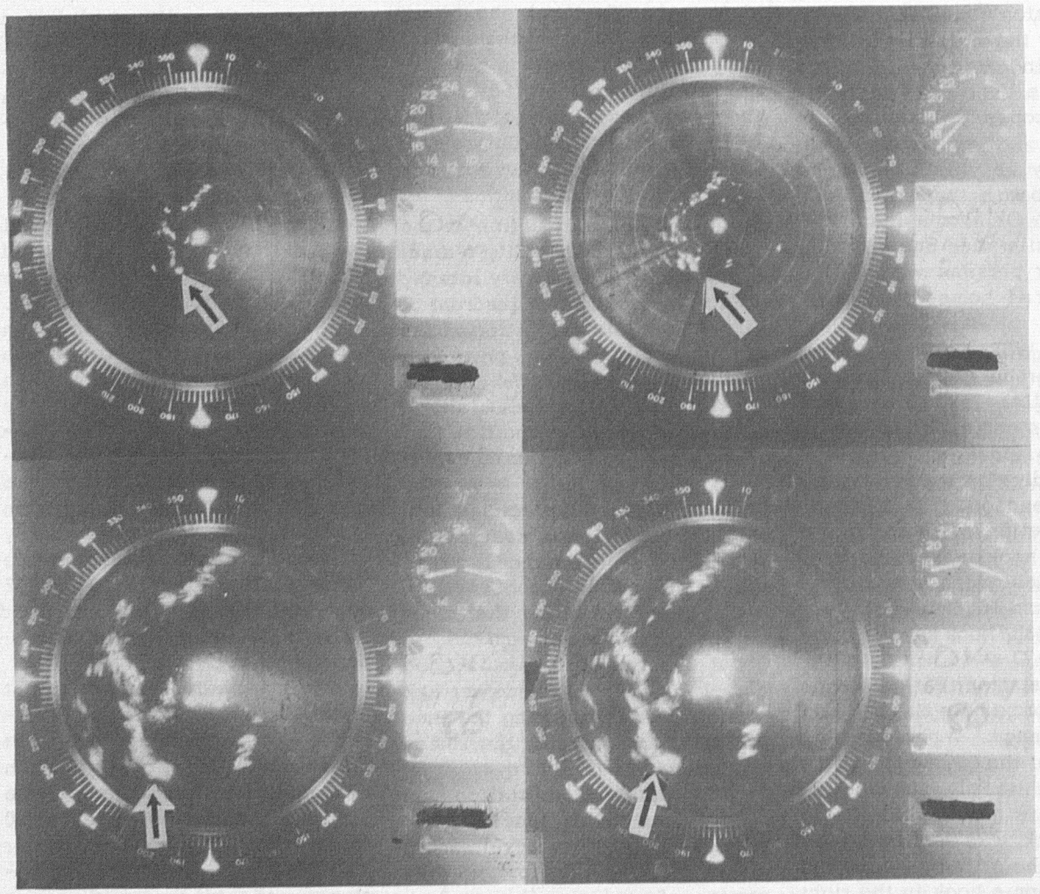


Figure 2. Photographic sequence of radar PPI scope, Oklahoma City, Oklahoma, showing echo associated with tornado of May 24, 1957.

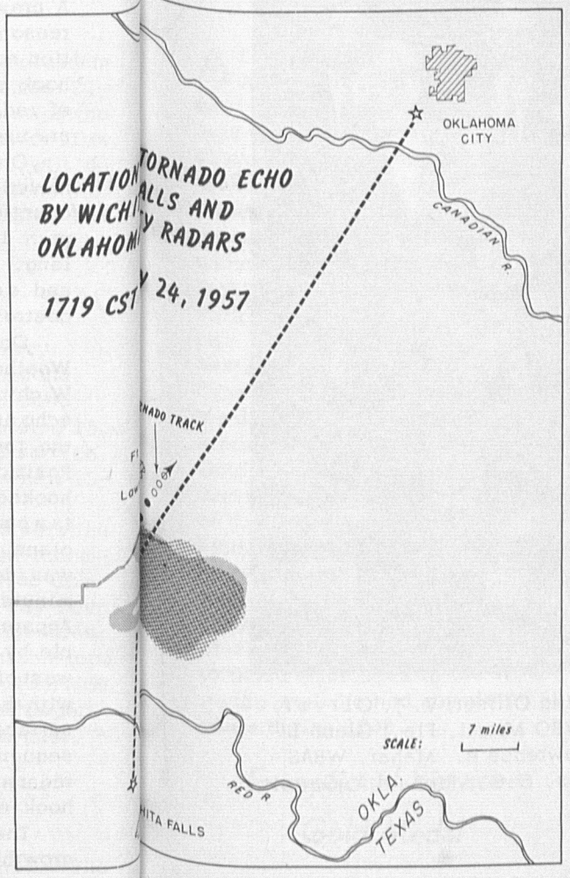


Figure 3

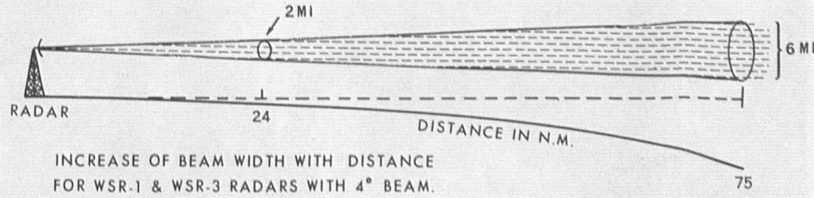


Figure 4

frequently observed with the tornado occurrence and by reduction of receiver gain, reliable estimate of the location of the hook as observed by a nearby station can be made.

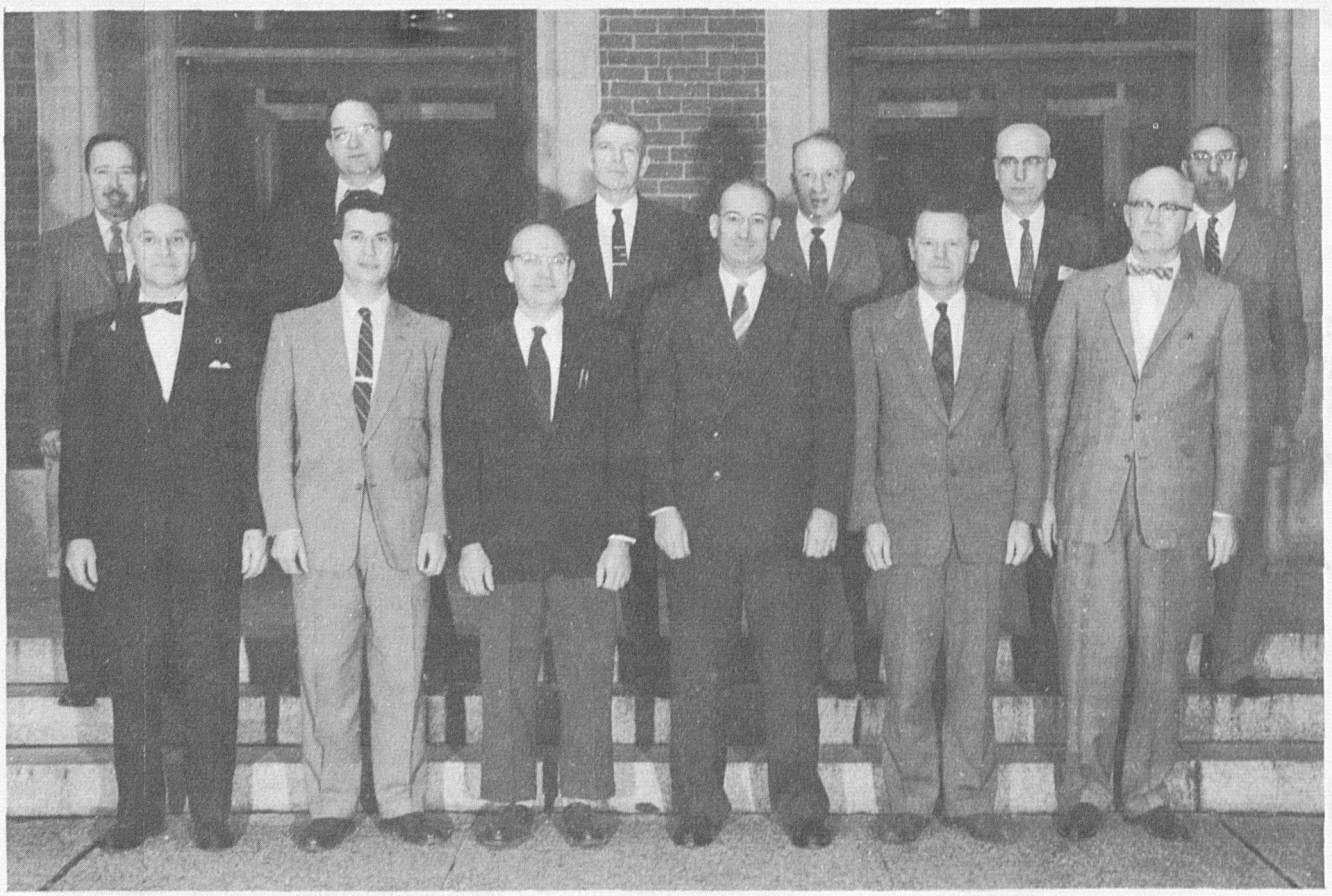
An optimum radar for tornado detection would be one with high power operating on 10 cm. wavelength (to minimize attentuation), having a narrow beam, and short pulse length. With such a radar, the assumption is that tornadoes could be identified by their hooks at considerably longer range than is possible with the WSR-1 and WSR-3 radars. It is necessary, however, with high powered radars, to reduce the gain somewhat to prevent the radar from seeing light rain that might obscure the hook on the PPI scope.

Eighth Advanced Study Group

THE Eighth Advanced Study Group, which had its first meeting on February 16, 1959, is larger by four members than any of the preceding ones.

Another "first" for this Advanced Study Group is that it is the first to use the much larger new quarters specially modified and refurbished for this purpose. These quarters are in a building designated as Commerce Annex No 2, and were formerly occupied by the Office of Technical Services, Department of Commerce. The building is just south of the Capitol Building and the Library of Congress, and about midway between the Central Office and the National Meteorological Center at Suitland, Maryland.

The usual facsimile and a teletypewriter drop have been installed for use of the Group.



Left to right-bottom row: Joseph L. H. Paulhus, C.O.; A. V. Carlin, Training Officer; V. J. Oliver, Instructor; Roger G. Plaster, WBAS Jacksonville, Fla.; Gordon E. Dunn, WBO Miami, Fla.; Glenn L. Bowie, C.O. Top row: Thomas E. Jermin, WBAS Great Falls, Montana; Lawrence R. Mahar, WBAS Hartford, Conn.; Kenneth R. Clark, WBAS Sioux Falls, S.D.; Alan H. Jones, C.O.; Richard A. Garrett, WBAS Topeka, Kansas; Oren E. Edrington, WBAS San Antonio, Texas.

Life (at sea) Can be Interesting

THE following is taken from the patrol report of the USCG Cutter McCULLOCH that reported on duty at station Bravo December 22, 1958:

January 2, 1959 2330 GCT:

Due to heavy seas, ship could not maneuver for radiosonde release. Three attempts were made

to release radiosondes without success. Raob program secured until weather improves.

January 3, 1959 1200 GCT:

Ship still unable to maneuver for radiosonde release. Seas estimated 50 feet and wind 60 knots with gusts to 80 knots. Rawin taken. Balloon shelter door jammed open at release.

January 3, 1959 1640 GCT:

Coast Guard Coxswain washed over the side during the height of the storm. Wind was east 65 knots with gusts to 90 knots, seas still estimated at 50 feet. Ship unable to come about. Rescue attempt was ineffective. This is the second man lost at sea this winter on ocean patrol duty.

January 3, 1959 1730 GCT:

Rawin program discontinued, live water being taken over the release deck.

January 4, 1959 1400 GCT:

Ship came about because of extensive damage to hull and superstructure from pounding into the seas. Ship now running with sea.

January 5, 1959:

Because of extensive damage to the ship and for the safety of the ship and personnel aboard, request was made to proceed to Hamilton Inlet, Labrador in lee of land and conduct station duties from that position.

Weather Bureau personnel on OSV duty face dangers at sea that few of us ashore can imagine. For their efforts under such hazardous conditions a "well done" is in order for Harold C. Long, shipboard supervisor, Walter L. Stoddard, Thomas H. Schaeffer and John C. O'Brien.

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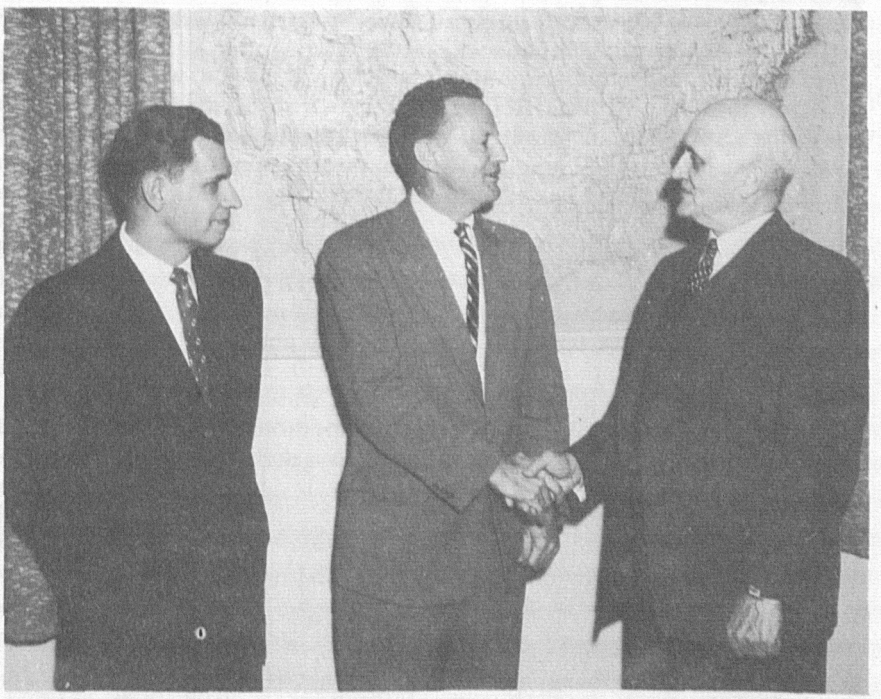
Department of Commerce Awards

AT the Eleventh Annual Honor Awards Program in the Department of Commerce Auditorium at 3:30 p.m. on February 16, 1959, 15 Weather Bureau employees were given recognition for their outstanding contributions to the public service or for services of unusual value to the Department. Eight employees were presented their awards at the ceremony by the Secretary of Commerce, assisted by the Chief of Bureau. Other recipients will receive medals in ceremonies at their stations at a later date. Three Gold Medals for Exceptional Service, the highest honor award of the Department, and 12 Silver Medals for Meritorious Service were granted to Weather Bureau employees this year.

At the same ceremony length-of-service awards were presented to those employees in the Washington area who had completed 40 years during 1958.



Chief of Bureau and Gold Medal Recipients Kohler and Dunn.

Exceptional Service—Gold Medal

GORDON E. DUNN, Chief District Meteorologist, Miami—for outstanding contributions to the public service in the field of hurricane warnings.

Mr. Dunn's leadership in the organization of hurricane preparedness conferences, his accomplishments in the preparation and dissemination of forecasts and warnings, and the substantial progress in the improvement of hurricane forecast techniques for which he has been responsible have brought widespread favorable recognition to the Bureau and the Department through an outstandingly successful hurricane warning service, climaxed last year during the passage of the potentially disastrous hurricanes "Daisy" and "Helene." As a result of the accurate and well-timed warnings, public inconvenience and preparedness expense were kept to a minimum, and no lives were lost.

Mr. Dunn has played a prominent part in state and local activities designed to improve hurricane warning distribution and preparedness arrangements. He has worked with the Red Cross, Civil Defense, and other officials in coordinating plans and procedures whereby loss of life and property, together with needless inconvenience and alarm, may be kept at a minimum. In 1957 he conceived the idea of preparedness conferences, now widely attended by communications, public safety, and disaster relief interests throughout all states in the hurricane belt.

GLEN JEFFERSON, formerly Regional Administrative Officer, Anchorage (retired September 20, 1958)—for valuable contributions to the public service through 40 years of sustained efficiency and devotion to duty, with particular reference to outstanding management of the Weather Bureau program in Alaska from 1943 until his retirement.

Despite the numerous problems which World War II, the remote location of Alaskan stations, and the severe climate presented, Mr. Jefferson accepted the Regional Director post for the important Alaska Territory in October 1943 and was successful in welding the widespread stations into a smoothly working, efficient team through effective liaison and intimate contact with every phase of field operations. He demonstrated an appreciation of the problems of other government agencies and private industry as well, and by maintaining continuous survey and appraisal of facilities and requirements for weather service, he was able to promote the cooperation and coordination so vital to an operation such as we have in Alaska. In addition, his deep concern for the welfare of employees and their families and his ability to assist them in the solution of the very real problems with which they are often faced have had a far-reaching effect on the success of the Alaskan program.

Operating with only general guidelines and a minimum of supervision, Mr. Jefferson not only accomplished the Bureau's objectives effectively but completed many worthwhile projects resulting in improved service in Alaska at reduced costs to the Weather Bureau.

MAX A. KOHLER, Meteorologist, Hydrologic Services Division—for important technical contributions to hydrology, highly distinguished authorship, valuable direction and stimulation of research and development in the hydrologic field, and for high creditable representation of the Weather Bureau in interagency and international technical conferences.

Mr. Kohler's work as Chief Research Hydrologist for the Weather Bureau has earned for him an international reputation as an authority in his field. Since entering the Bureau in 1940, his efforts in research have yielded an ever-increasing number of articles and papers dealing with the many phases of his field, including flood forecasting, rainfall runoff, water supply forecasting, and meteorological testing and research techniques. He has coauthored two textbooks within the past ten years. During this period his major contributions have been as follows:

1. The development of methods for computing evaporation from pans or lakes from common meteorological observations.

2. The development of template and other mechanical routing methods to speed up flood-forecasting procedures.

3. The extension of evaporation computing techniques to the computation of evapotranspiration.

4. The application of evapotranspiration computing methods in a basin water accounting procedure which reduces the river-forecast error by about one-third.

Mr. Kohler has participated in numerous conferences and activities of the WMO and the United Nations. He spent several months in Yugoslavia in 1953 under the U.N. Technical Assistance Program and was a guest lecturer in Czechoslovakia in April 1958.

Meritorious Service—Silver Medal

HAROLD N. BURKE, MIC, WBAS Cleveland—for valuable contributions to the public service as MIC at Cleveland, with particular reference to his achievement in the development of an outstanding public service program.

Mr. Burke has done an exceptionally fine job of carrying out his responsibilities at Cleveland since 1954 and prior to this assignment in his capacity as Principal Assistant at the New York Regional Office, upholding the reputation for resourcefulness, industry, and efficiency which he established early in his career. He is an effective organizer, operates a smooth-running, efficient station, and with the wholehearted support and loyalty of his staff, renders an excellent service for the Weather Bureau.

FRANK W. BURNETT, Assistant Director for Weather Analysis and Forecasting, National Meteorological Center—for outstanding work which has resulted in greatly improved analyses at the National Weather Analysis Center during the past five years.

In his capacity of Assistant Chief of the Center Mr. Burnett has furnished exceptionally strong leadership in the interpretation and application of modern dynamic meteorological principles to the daily map analyses and prognoses in addition to displaying a great deal of imagination and ingenuity in independent research, which have been responsible for significant improvements in analysis

techniques and technical operations.

W. CLYDE CONNER, Meteorologist, WBO New Orleans—for valuable contributions to the public service as District Hurricane Forecaster at New Orleans.

Mr. Conner's unusual competence and high devotion to duty during hurricane emergencies for the past six years and the valuable studies he has made to improve hurricane forecasting have contributed immeasurably to the success of the important Gulf hurricane forecast service. In addition, the accurate and timely small-craft warnings for which Mr. Conner has been responsible have been credited with saving many lives.

EDWIN C. FLOWERS, Meteorologist, Office of Meteorological Research—for outstanding service in successfully establishing and operating the meteorological program at Amundsen-Scott station in the Antarctic during 1957.

Merely to have been among the first to have survived for a year at the South Pole would have been a noteworthy accomplishment, but the Weather Bureau team of four men, headed by Mr. Flowers, established and operated for a year complete meteorological observations, including upper air observations. The high degree of resourcefulness, ingenuity, and courage displayed in the difficult installation, operation, and maintenance of equipment under the adverse conditions existing at Amundsen-Scott station, and the excellent measurements and observations which were obtained under Mr. Flower's leadership exemplify the creditable performance and technical competence on which his award is based.

BEN W. HARLIN, Meteorologist, Office of Meteorological Research—for successfully operating a complex meteorological program under extremely adverse conditions as Meteorologist in Charge at Little America during 1957.

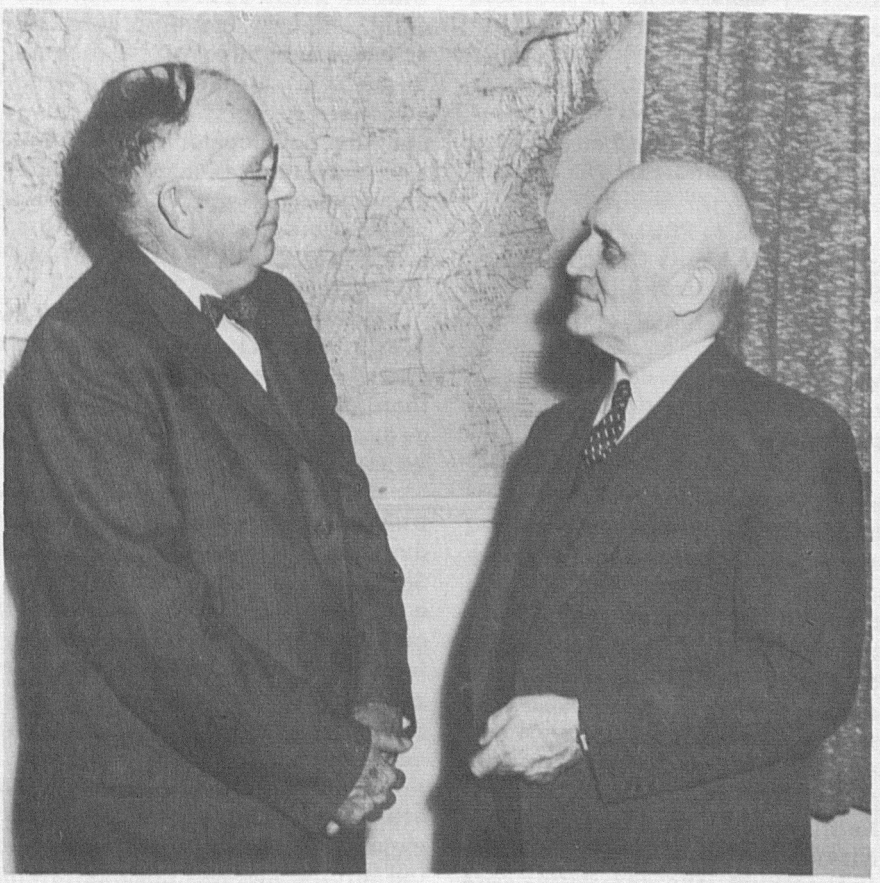
The meteorological program at Little America would have been difficult to operate at a station in a temperate climate, but under the severe weather conditions of the Antarctic the program required much initiative, ingenuity, resourcefulness, perseverence and hard work, as well as a well-rounded knowledge of special observational methods. Mr. Harlin displayed unusual ability in installing, operating, and maintaining intricate scientific equipment for special observations and measurements, considerable ingenuity in the use of novel methods and devices to solve difficult problems, high devotion to duty, and excellent judgment in the successful pursuit of the program at Little America during the initial 12 months of the International Geophysical Year.

ERNEST C. JOHNSON, MIC, WBO Albany—for extremely competent performance as MIC at Albany for the past 10 years.

In meeting the service requirements of the Albany office, Mr. Johnson and his staff have gained the respect and admiration of the many interests served, as evidenced by numerous letters of commendation from the press, private industry, and local, state and federal government agencies. His ability to deal effectively with others, together with his capable leadership and active participation in the program he manages, has resulted in the development of outstanding public service at Albany.

RAYMOND H. KRAFT, Meteorologist, WBO New Orleans—for valuable contributions to the public service as District Hurricane Forecaster at New Orleans.

Mr. Kraft's unusual competence and high devotion to duty



Chief of Bureau and Wiley Sims—Silver Medal.

during hurricane emergencies for the past 12 years, his effective leadership as Supervising Forecaster, and the valuable studies he has made to improve hurricane forecasts have contributed immeasurably to the success of the important Gulf hurricane forecast service. In addition, the accurate and timely small-craft warnings for which Mr. Kraft has been responsible have been credited with saving many lives.

KENNETH M. NAGLER, Meteorologist, Office of Meteorological Research—for valuable contributions to national safety and welfare through important research on the application of meteorology to problems in the field of radioactive fallout.

Mr. Nagler has distinguished himself by consistently outstanding work on the various research projects in which he has been engaged since 1949. He is an acknowledged leader in the field of fallout forecasting, and in addition, his contributions in connection with classified assignments have drawn high praise from officials of the Atomic Energy Commission and the Department of Defense.

EUGENE L. PECK, Meteorologist, Water Supply Forecast Unit, Salt Lake City—for valuable contributions to the public service through his excellent work in water supply forecasting and in the development of forecast procedures.

Under Mr. Peck's leadership the Water Supply Forecast Unit has moved to a widely recognized and appreciated position in forecasting for the Great Basin and in the field of hydrologic investigations. Mr. Peck has represented the Bureau very creditably in his contacts with other federal and state agencies, as well as private and civic organizations, for the purpose of coordinating the collecting and reporting of pertinent data, determining needs for forecast service, and assisting users in making proper and maximum use of the service provided by his Unit.

MARSHALL M. RICHARDS, Hydrologist, River Forecast Unit, Knoxville—for extremely competent performance in carrying out important assignments and for significant service to the advancement of the Weather Bureau's program of hydrology.

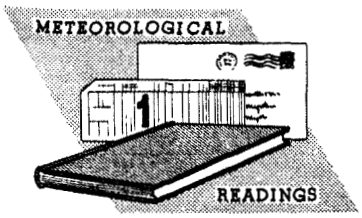
Shortly after entering the Bureau in 1946 Mr. Richards was selected to serve on the staff at the Cincinnati River Forecast Center. His technical ability resulted in excellent leadership in directing the staff in the application of hydrologic principles; his resourcefulness in developing operational procedures was instrumental in the successful establishment of the Bureau's RFC-RDO program; and his competence in forecasting was ably demonstrated during flood emergencies. In 1951 he was chosen to head the new River Forecast Unit at Knoxville, which was established to develop forecast schemes and issue river forecasts to the TVA. He has continued to demonstrate outstanding ability, and the developmental work and the excellent exchange of data and ideas for which he has been responsible are tributes to his professional competence and diplomacy.

WILEY K. SIMS, MIC, WBAS Winston-Salem—for valuable contributions to the public service through the highly effective program he directs as MIC at Winston-Salem.

Throughout his entire Weather Bureau career, and particularly during his 15 years at Winston-Salem, Mr. Sims has maintained a record of extremely competent performance. Under his capable leadership, and with the complete cooperation and confidence of the personnel under his supervision, excellent public service is being rendered at Winston-Salem. An effective organizer, Mr. Sims has expanded and improved the warning service and has demonstrated time and again his outstanding ability to get the warnings and forecasts to the users quickly, accurately, and in language they understand. His ability to humanize the weather story day after day, coupled with the important part weather plays in the agricultural, aviation, and business life of the Winston-Salem area, has made the direct radio broadcasts from his station rank near the top in listening audience.

HERBERT C.S. THOM, Meteorologist, Office of Climatology—for valuable public service through investigations of meteorological statistics and engineering techniques and their application to the agricultural and industrial economy of the United States.

Throughout his career of more than 20 years in the Weather Bureau, Mr. Thom has rendered excellent service in numerous important assignments. His work as Chief Climatologist has earned for him an international reputation as an authority in the field of statistical meteorology. He served from January 1955 to January 1957 on the President's Advisory Committee on Weather Control, his major contribution being the development of statistical methods to evaluate the results of cloud seeding. As a delegate of the U. S. to the First Session of the Commission for Climatology of the WMO in March 1953 and to the Second Session in January 1957, he served as representative of the U. S. Government in reaching agreement on problems of international scope in the field of climatology. He is a member of the Committee on a National Atlas of the United States and has been active in designing a suitable base map for a national atlas and selection of data for presentation in the National Atlas Series. Mr. Thom has had more than 30 papers published since 1948 and is presently writing a series of articles on statistical methods and their application to Geophysics for the Handbuch der Geophisik to be published by Bartels in Germany.



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXIII: Experimental Analogies to Atmospheric Motions, by Dave Fultz, Model Techniques in Meteorological Research, by Hunter Rouse, and Experimental Cloud Formation, by Sir David Brunt, on pages 1235 through 1261 of the Compendium of Meteorology.

About the Assignment: Many schools are now having science fairs. Counselling for or judging of meteorological exhibits is an excellent way to stimulate young people in science. This assignment contains many ideas for exhibits along with an indication of the limitations of meteorological experiments. More information about atmospheric models and other experiments may be found in the following articles in Weatherwise:

A Tornado Model and Fire Whirlwind, James E. Miller, Vol. 8, No. 4, August 1955, pp. 88-91.

Simple Experiments in Atmospheric Physics, Vincent J. Schaefer:

No. 1, Vol. 8, No. 2, April 1955, pp. 48-49, 58;

No. 2, Vol. 8, No. 3, June 1955, pp. 68-71;

No. 3, Vol. 8, No. 4, August 1955, pp. 101-103;

No. 4, Vol. 8, No. 5, October 1955, pp. 118-119, 123;

No. 5, Vol. 8, No. 6, December 1955, pp. 141-143;

No. 6, Vol. 9, No. 4, August 1956, pp. 132-135;

No. 7, Vol. 9, No. 6, December 1956, pp. 195-197;

No. 8, Vol. 10, No. 2, April 1957, pp. 44-46.

QUESTIONNAIRE

Col. 61 Which non-dimensional number in fluid mechanics is related to viscosity?

1. The Euler number
2. The Froude number
3. The Reynolds number
4. The Mach number

Col. 62 What velocity measurement is the hot-wire anemometer best suited?

1. mean
2. high
3. low
4. fluctuating

Col. 63 What might be added to simulate heat convection in an experiment using water?

1. finely dispersed bubbles at a lower boundary
2. finely dispersed bubbles at an upper boundary
3. a denser immiscible fluid at the lower boundary
4. a denser immiscible fluid at the upper boundary

Col. 64 What advantage would experiments about the atmosphere conducted in a rotating paraboloid have over a sphere?

1. an equipotential surface would be possible
2. the Coriolis parameter would be variable
3. the planetary shape would be more closely approximated
4. the apparent gravity acceleration would be constant

Col. 65 What have experiments resembling tornadoes led to?

1. formulation of Π-theorem
2. Severe Local Storms
3. very little beyond elementary theory
4. important applications to polar vortex studies

Col. 66 Which of the following ratios is a similarity parameter related to quasi-geostrophic motion?

1. u/C_E
2. $\Omega u/r\Omega^2$
3. $u^2/r\ (\Omega u)$
4. $(u^2/r)\ (\Omega u)$

Col. 67 What does a roto-scope accomplish?

1. reduces rotation to apparent rest
2. induces rotational motion in fluids
3. measures rotational speed
4. determines balance in rotational systems

Col. 68 Which of the following is least required to improve atmospheric experimental work?

1. systematic and sustained effort
2. attention to theory
3. numerical measurements
4. qualitative observations

Col. 69 Under what conditions would Benard cells be easiest to produce?

1. two free surfaces
2. two rigid boundaries
3. one free, one rigid surface
4. conditions listed would make no difference

Col. 70 Which set of conditions would produce Benard cells in air according to Chandra's observations:

	Depth (mm)	$\Delta T/\bar{T}$
1.	7	0.10
2.	10	0.06
3.	7	0.04
4.	10	0.02

Report from the Pennsylvania State University

THE semi-annual report from The Pennsylvania State University which covers the period, July 1, 1958 to January 1, 1959, shows that the total number of Weather Bureau employees enrolled in meteorological correspondence courses was 578. Of this number, 110 courses were completed during the six months.

Comparison of the number of carry-overs at the beginning and ending of the period indicates 46 more enrollments on January 1, 1959 than on July 1, 1958.

Static Eliminators for Teletypewriter Paper

AN article on Static Eliminators for Teletypewriter Paper appeared in the December 1957 issue of TOPICS. Since that time sensitive radiological instruments that measure radioactivity have become available to the Office of Civil and Defense Mobilization which in turn has assigned some of them to Weather Bureau stations. We have a report from OCDM that states "During a check of two of the T-35 Ionotron Static Eliminators on teletypewriters at Weather Bureau stations the instrument registered an alarming amount of radioactivity present at close range. Several eliminators in a small area could produce a harmful dosage."

We would suggest that the T-35's in present use be returned to the installing companies and that one of the other suggested types of static eliminators described in the December 1957 TOPICS article be tried.

We will keep you advised in TOPICS of later developments of the T-35 or of other eliminators.

Special Rawinsondes for 1958 Severe-Weather Projects

DURING 1958, 1216 special rawinsonde observations were taken for the tornado project, 37 for typhoon purposes, and 83 in connection with hurricanes, for a total of 1336. A breakdown by months follows:

Month	Tornado	Hurricane	Typhoon
January	28	0	4
February	41	0	0
March	62	0	0
April	153	0	1
May	156	0	8
June	206	0	3
July	209	3	9
August	153	33	4
September	97	45	3
October	57	2	0
November	54	0	2
December	0	0	3

Forty-six stations took specials for the tornado project. Those taking more than 60, together with the number they took, are listed below:

Amarillo	76	Topeka	64
Midland	72	North Platte	63
Dodge City	66	Omaha	61

The four stations taking most of the hurricane specials were Miami and Jacksonville with 15 each, Charleston 14, and Cape Hatteras 12.

For typhoon purposes, Guam took 22 specials, which represents 59 percent of all the specials taken for this purpose.

These specials place an additional workload upon the stations concerned; the observers participating in these observations are commended for their efforts.

Length of Service Awards

35-Year Awards

Asheville, N. C. WBO
Frank C. Hood
Central Office
Rheinhart C. Schmidt

30-Year Awards

Asheville, N. C. NWRC
Arthur C. Wagner
Central Office
Howard C. Sumner
Jack C. Thompson
Fresno, Calif. WBAS
Arvy A. Lothman
Portland, Maine WBAS
John O. Lunt
Providence, R. I. WBAS
John J. Lavin

Savings Bond Committee for Mississippi

G. V. FISH, MIC, WBAS Jackson, Mississippi reports the following:

"News and Views of Savings Bonds for Mississippi reporting last quarter activities for 1958 indicated that seven local agencies in Mississippi had perfect records for participation in the final quarter in the bond purchase program through the payroll savings plan.

"Of these seven agencies the Jackson, Miss., U. S. Weather Bureau Airport Station staff held the strongest position, with 16 members participating in the program. The nearest 100 percent agency in the State reported a staff of eight participants. Participants in the Interdepartmental Savings Bond Purchase Program are storing nest-egg resources for possible rainy days. The Jackson staff has come to appreciate this easy way of establishing a saving habit in our age where there are so many nice and desirable things of transient value tempting the would-be-saver."

RETIREMENTS

Ethel M. Fuller

ETHEL M. FULLER, Voucher Examiner in the Fiscal Section of the Central Office, retired February 28 after nearly 31 years of government service.

A native of Maine, Miss Fuller graduated from Biddeford, Maine High School and attended Gray's Business College in Portland. She was employed as a secretary with the Maine Central Railroad Company before entering the government service as a clerk in the Treasury Department in 1927. She came to the Weather Bureau by transfer on June 16, 1930. Her entire Weather Bureau service of more than 28 years has been spent in various assignments in the fiscal area.

Combining a warm, pleasant personality with the ability to perform creditably any assigned task, Miss Fuller has won the admiration and respect of a host of friends and associates during her long Weather Bureau career.

Miss Fuller will leave on an extended tour of Europe in April. She will maintain her residence in Washington at 3000 Connecticut Avenue, N. W., but plans to spend some time each summer with her family in Maine and each winter with a sister in Florida.

Vincent J. Tomardy

VINCENT J. TOMARDY, Training Officer in the Charting Unit at the National Weather Analysis Center, retired January 26 because of disability after more than 14 years of government service.

A native Washingtonian, Mr. Tomardy graduated from St. Paul's High School in 1941 and was employed in the Navy Yard prior to his entry into the military service. Following his discharge from the Navy in 1945, he was employed in private industry for several years before joining the Weather Bureau as a Meteorological Aid (Chartman) in February 1949.

From his first assignment Mr. Tomardy earned a reputation for efficiency and industry which he has continued to uphold, as evidenced by his having been awarded a Superior Accomplishment Salary Increase in 1953 for outstanding performance in charting and in assisting his supervisor in the training of new personnel. In addition he received a Superior Performance Award of $200 in 1957 for his excellent work as Training Officer and has been responsible for suggestions resulting in increased efficiency and monetary savings at NAWAC. His technical competence, dedication to duty, tireless energy, and genuine interest in his work are well known to all with whom he has been associated.

Mr. Tomardy's mailing address is 601 64th Avenue, N.E., Washington 27, D. C.

Gerald C. Bristow

GERALD C. BRISTOW, Publications Writer in the Office of Climatology, died February 8 at the age of 54.

A native of Illinois, Mr. Bristow graduated from Blackburn College in Carlinville and taught for one year in the Illinois rural schools. He was employed by the Post Office Department in Chicago just prior to joining the Weather Bureau as a Junior Observer in Chattanooga on November 1, 1926. He later served at Key West, Savannah, Vicksburg, Charlotte, and Raleigh, transferring to the Central Office as a Scientific Aid in the Statistics Division on May 7, 1942. His excellent work brought promotion to meteorologist, and in 1946 he accepted an assignment in the Climatological and Hydrologic Services Division. Mr. Bristow's broad knowledge of foreign meteorological services, the availability of foreign climatological data, and developments in climatology in foreign countries, as well as his familiarity with the meteorological literature of other countries, has been extremely valuable in performing a variety of assignments in the climatological services area. He has written many papers concerning the climate and weather of foreign countries, and in his most recent assignment in the Marine Area Section, one of his responsibilities was editing the "Mariners Weather Log," a bi-monthly Weather Bureau publication dealing with Marine Climatology.

Mr. Bristow is survived by his wife, who lives at 7 Austin Court in College Park, Maryland, and two sons, Bertram and Rayburn.

Milton W. Dow

MILTON W. DOW, Official in Charge at Burlington, Vermont, when he retired in June 1951, died January 26 at the age of 67.

Mr. Dow completed over 40 years in the government, serving at Burlington from 1930 until his retirement. The July 1951 TOPICS carried an account of his career in the Weather Bureau.

Mr. Dow's wife lives at Reading Inn, Reading, Massachusetts.

John T. Lindgren

JOHN T. LINDGREN, who retired because of disability in December 1955, died January 11 in Washington, D. C. at the age of 61. He was employed in the Hydrologic Services Division at the time of his retirement, having served in the Weather Bureau for more than 15 of his 30 years in government. (See January 1956 TOPICS.)

Mr. Lindgren is survived by his wife, who lives at 5315 Macomb Street, Washington 16, D. C.

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WEATHER BUREAU

TOPICS

APRIL 1959

New WB Radiotheodolite (For story see page 65)

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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.

CHIEF, BUDGET AND MANAGEMENT DIVISION

Theodore P. Gleiter

THEODORE P. GLEITER, Chief of the Budget and Management Division brings to this challenging assignment a varied and extensive background to meet the task ahead. Joining the Weather Bureau after World War II, Mr. Gleiter was on the "Hypo" Project in the Mediterranean Area, served with the Analysis Center, the Office of Plans and Program Management, and in several capacities in the Division of Forecasts and Synoptic Reports. During these latter assignments he participated in numerous staff studies, and made many field visits. As a result he became one of the Central Office leaders in the general effort of improving the public forecast and severe storm warning services of the Weather Bureau.

A native of Wisconsin, Ted obtained his Bachelor of Science Degree from Wisconsin State Teachers College. His pre-Weather Bureau jobs included, high school teacher of mathematics and science, civilian instructor in radio telegraphy for the War Department, and service as an aerological officer in the U.S. Navy.

Ted is a firm believer in training and education, and he has had several opportunities to improve his own qualifications. In addition to a B.S. degree, he has had a year's training in meteorology at the University of Chicago where he ranked 2nd in a class of 300 students; studies at the Institute of Tropical Meteorology at San Juan, P.R.; completion of the Civil Service Commission's Intern Program; completion of the Weather Bureau's Advanced Study Group program; and an M.S. degree in Public Administration from American University. Currently, he is pursuing an additional course of study at a local university.

Ted and Marcia's four children, Karin, Jan, Tom, and Martha, keep his home life active. Known as a "doer" both on and off the job, Ted is very active in church, PTA, and community affairs. He is Superintendent of his Sunday School, president of the local PTA, and often engineers a large fund raising community dinner or similar activity for some worthy cause in the evening. Among his hobbies are gardening and stamp collecting. He is a member of the American Meteorological Society.

Summer Atmospheric Science Program for High School Students

THE following information will be of interest to all Weather Bureau employees. MIC's and others who have public and secondary school contacts can be of service to this program by publicizing it and giving it their full support and enthusiasm.

The American Meteorological Society has been awarded a grant by the National Science Foundation for support of a Summer Science Training Program for Secondary School Students under the direction of Dr. Vincent J. Schaefer. The Atmospheric Sciences Program will be carried on at the Loomis School in Windsor, Connecticut, 21 June through 9 August 1959.

The objectives of the program are to give opportunity to promising secondary school students to gain an increased understanding of scientific content and methods through instruction given by persons of recognized scientific stature and to help develop cooperation between colleges and high schools in increasing the quality of education in the sci-

ences.

Thirty male students from throughout the country will be selected on the basis of school records, special tests, and interviews. All applicants must have completed the 11th grade by June 1959. Candidates who wish to make application should rank very high in their class, should have completed three years of mathematics and one year of chemistry or physics in secondary school, and should have a keen curiosity in the area of science.

Applications may be obtained from George B. Savage, Dean, The Loomis School, Windsor, Conn. Descriptions of the Atmospheric Sciences Program will be mailed with applications.

Students selected for the program will receive a travel allowance up to $80.00, full scholarships to include tuition, room, board, and laundry, and they will live in Windsor at the Loomis School.

Participating in the program are Dr. Vincent J. Schaefer, Academic Director, consulting meteorologist, Schenectady, N.Y.; Professor Jerome Spar of the Department of Meteorology and Oceanography of New York University who is chairman of the executive board; Professor Roscoe Braham, Jr., of the University of Chicago, Department of Meteorology, member of the executive board, and George B. Savage, Dean of the Loomis School. The lecture-laboratory course on The Methods, Nature and Philosophy of Physical Science will be given by Dr. F. Woodbridge Constant, Chairman of the Physics Department of Trinity College. Howard E. Norris, Chairman of the Science Department of the Loomis School, will assist in the field and laboratory exercises and accompanying research lectures in the atmospheric sciences.

Material prepared by Prof. Spar about the program is being directed to officers of the fifty-three local seminars of the American Meteorological Society. These local representatives may contact secondary and private schools in their areas. Prof. Spar is also Chairman of the Schools Committee of the Society that is concerned with secondary and elementary education.

Junior staff counselors will be selected from the ranks of graduate and undergraduate college students in meteorology or physics. Young men interested in spending eight weeks, with adequate compensation, assisting in the science education of bright high school boys should contact: Special Summer Science Program, American Meteorological Society, 3 Joy Street, Boston 8, Mass.

The American Meteorological Society is also carrying on a Visiting Lecturer Program in the colleges and universities under sponsorship of the National Science Foundation.

Radar Meteorology Course at the University of Miami

AN integral part of the expanded Weather Surveillance Radar Network Program involving the new WSR-57 radar, is a series of four-week radar meteorology courses to be given at the University of Miami. These courses, which began March 30, 1959, are specifically designed for the Radar Meteorologists who will operate the WSR-57's. MIC's or top supervisors at stations where the WSR-57 will be installed will also be assigned to the courses, most of them in the first two. The Radar Meteorologists will be assigned to courses as close as possible to the WSR-57 installation dates, so that there will not be too long a period of time between the classroom work and its application.

It is believed that the Radar Meteorology course would be useful to all meteorologists concerned in one way or another with Weather Bureau radar, either in plans for installation, or in interpretation of radar echoes, but funds are not available for the broad-scale training program that would be necessary for this. Consequently, the assignments are being made mainly among Meteorologists and Meteorological Technicians who have had little or no past experience in radar, and who will be responsible for the operation of the new WSR-57, since these employees will need it more than others. Perhaps, later on, funds may become available for conducting further courses, so that eventually all employees concerned with the radar program will have a chance to supplement their experience with formal training. Until such a time, the Central Office will have to limit assignment to the course according to the above criteria.

Have You Had Your Polio Shots?

THIS question has been addressed to the 56 percent of our population that has failed thus far to protect itself with the three-shot immunization against poliomyelitis.

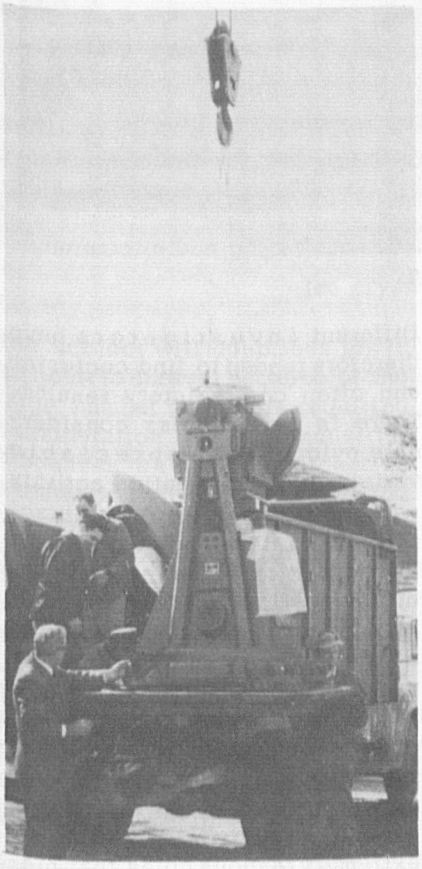
This sort of warning question was voiced last year by the U.S. Public Health Service, but it has gone unheeded, and this means that many millions of Americans are flirting with danger unnecessarily. The vaccine is readily available. Private physicians are equipped to administer it at relatively small cost, and it can also be had free of charge.

New WB Radiotheodolites

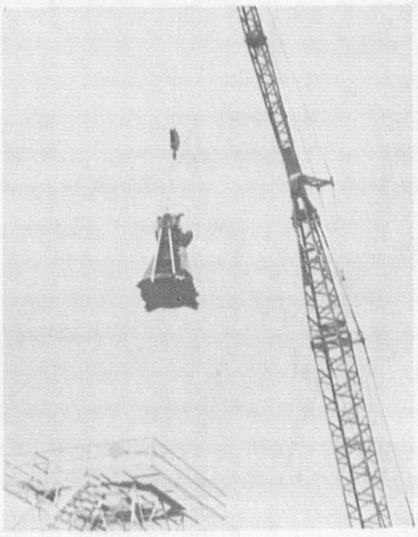
ON March 23, 1959, the first radiotheodolite (WBRT-57) designed and built for the Weather Bureau's upper-air program was delivered to the Silver Hill Observatory, Washington, D.C.

The WBRT-57 is an automatic-tracking set operating on a frequency of 1680 megacycles. In mode of operation, it is similar to the GMD-1A. Many improvements have been made over the earlier military design. Provision has been made for the addition at a later date of the components required to convert the new radiotheodolite to the transponder principle. Each WBRT-57 costs $25,900 exclusive of installation.

The second and third sets will be shipped to Columbia, Missouri, and Anchorage, Alaska, in the near future. These first three sets will be used for training purposes. The remaining 39 sets, now on order, will follow at the rate of approximately five per month, and will be used to replace an equivalent number of SCR-658 tracking sets. Procurement of additional sets in fiscal year 1960 will complete the changeover.

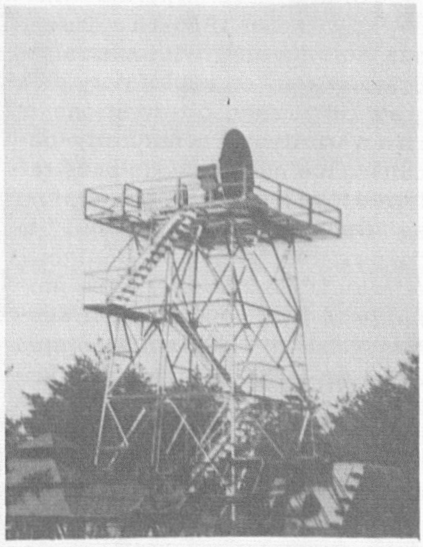


Unloading WBRT-57 pedestal from truck.



Hoisting pedestal onto platform.

The SCR-658 sets have a serious deficiency in that they cannot measure high wind speeds; consequently, wind data are missing when the information is of most value. The new sets will correct most of this difficulty. For example, the highest average wind speed that can be measured with a perfectly exposed SCR-658 along a constant azimuth, and with an average balloon ascensional rate of 350 meters per minute, is 49 miles per hour, whereas with the WBRT-57, it is 124 miles per hour. Conversion of the WBRT-57's to the transponder principle will enable the equipment to measure slant range of the balloons. This feature will minimize the effect of errors in the vertical angle when the balloon is at low angles and will facilitate automatic computation of the rawinsonde data.



WBRT-57 radiotheodolite on platform.

Historical Note on Lightning

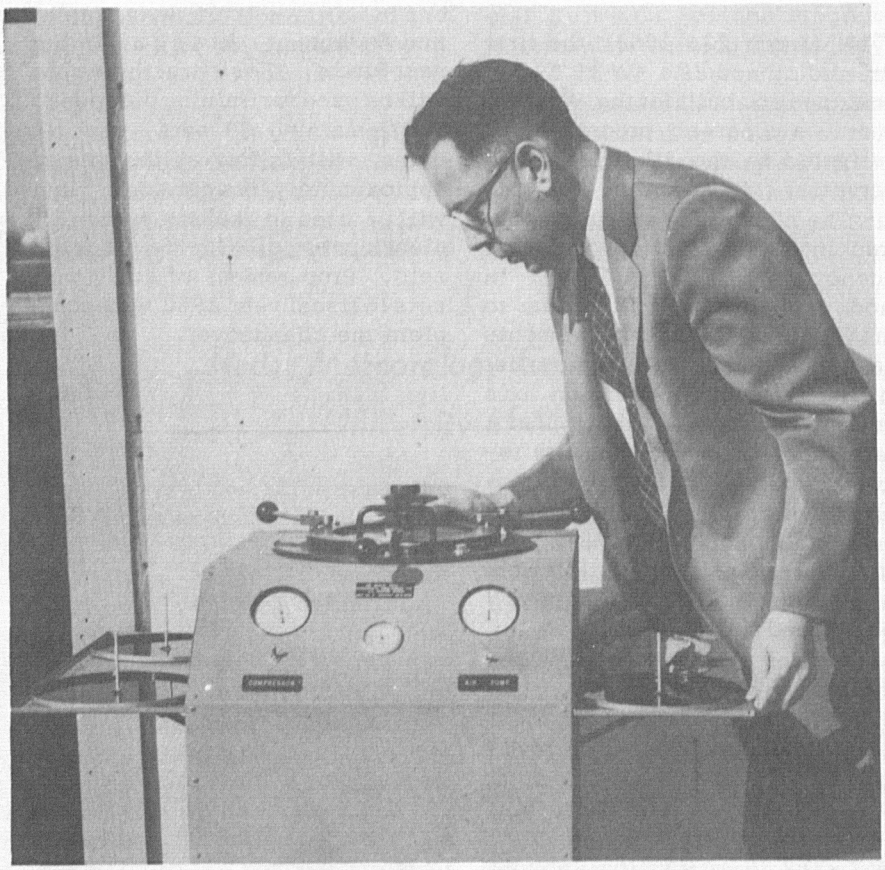
IN reviewing past Weather Bureau documents it is interesting to note the care in which weather statistics were compiled as far back as 61 years ago. The 1898 report of the Chief of the Bureau to the Department of Agriculture stated that the following casualties and damage were caused by lightning during that year:

Deaths		Destroyed or Damaged	
397 people	30 mules	966 barns	95 churches and schools
964 cattle	426 sheep	735 houses and buildings	
306 horses	116 hogs		

Experimental Cloud Chambers Undergo Service Tests

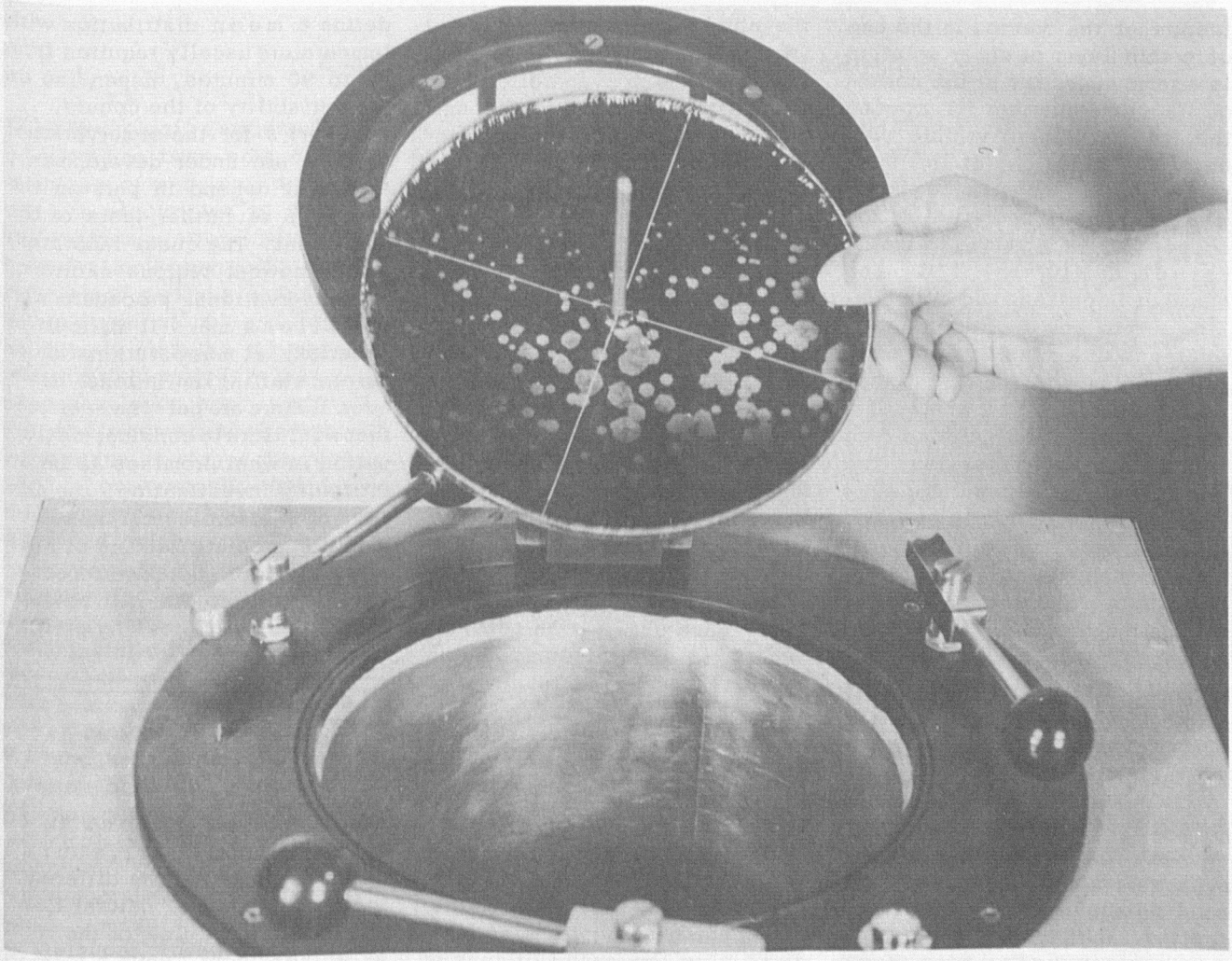
DURING selected periods since December 1956 the Bureau has collaborated with Australian Scientists in an exploratory program of surface observations of the variations in naturally-occurring ice nuclei (sometimes referred to in the technical literature as "freezing," "sublimation," or "deposition" nuclei with slightly different connotations). The project was first undertaken at several sites in the Caribbean area under the National Hurricane Research Project, and by early 1958 included a series of measurements at Mauna Loa Observatory, T.H., and Washington, D. C.

Long recognized as a potentially important research problem in experimental meteorology as an outgrowth of the pioneering cloud physics work of Wegener around 1910, Findeisen in the 1930's and early 40's, and, in recent years, the extensive experimentation in cloud modification, the subject has proved to be exceedingly complex and elusive. Current data indicate that, unlike condensation nuclei which, although present in the atmosphere in variable numbers and sizes, always seem to exist in sufficient quantities to permit droplet formation at or near saturation humidities, those particles which act to trigger the freezing of subcooled droplets are sometimes relatively rare. This is especially evident at temperatures warmer than roughly -15°C. As an order of magnitude, only about one out of a million particles normally suspended in the lower atmosphere acts as an efficient center for ice formation. The exact mechanism is uncertain, as is the physical-chemical nature of the responsible particles. These poorly known factors together with their minute sizes have so far prevented straightforward physical attacks on the problem, although there are some promising clues emerging from laboratory studies underway at several places. The most fruitful approaches require the use of electron microscopy and other delicate and highly specialized procedures.



Dwight B. Kline, Project Leader, demonstrating nuclei counter on roof of Administration Building.

Routine observations of the natural variability of ice nuclei have been handicapped by a lack of equipment capable of both objective observations and use beyond laboratory environments. There is as yet no generally recognized standard or absolute method. The results to date have been influenced in part by factors not readily controllable with simple cloud chamber equipment or "cold boxes," as they have come to be known in the field. Different investigators have therefore tended to find confusing and often contradictory results. There is nevertheless considerable evidence of appreciable variations in nucleation activity with occasional periods characterized by rather abrupt increases and equally rapid decreases in the number of ice crystals produced in a subcooled laboratory fog at a given temperature. There are vague suggestions of a connection with airmass history and other synoptic features, and the meteoric dust hypothesis advanced by Dr. E. G. Bowen is well known in the field. There are extremely tenuous clues that preactivation phenomena of an uncertain nature could be involved.



Ice crystals grown in sugar solution on removable tray.

The subject will doubtless prove difficult to unravel because of the large number of factors requiring consideration. Some industrial processes seem to emit active substances, and certain soils and other natural dusts such as volcanic debris are believed to include ice nuclei. Several types of silicates appear to be among the more likely naturally-occurring compounds identified so far. The paper, "A Note on Freezing Nuclei Anomalies" by Messrs. D. B. Kline and G. W. Brier in the September 1958 issue of the Monthly Weather Review summarizes some of the more recent empirical evidence from observations of natural ice nuclei variations obtained with cloud chamber techniques.

The experimental equipment loaned to the Bureau by the Australian Commonwealth Scientific and Industrial Research Organization demonstrated a capability of providing reasonably reproducible observations with careful use. This feature combined with a somewhat greater flexibility than most other current techniques indicated that a continued observational program should be feasible. With the end of the useful service life of the original cold boxes in sight, the Bureau recently completed arrangements for procurement of eleven new cloud chambers now under construction. The first of the new "Experimental Bigg-Warner Type" (named after the Australian scientists responsible for the technique) ice nuclei counters are undergoing service tests and the remaining units are scheduled for delivery in the near future. The basic features are identical in most respects to the original Australian units, but efforts have been made to standardize most of the components with parts more readily available from domestic sources.

Although the observational procedure is extremely simple, the technique requires a high degree of care to prevent spurious counts due to frost formation on the refrigerated walls of the 10-liter cold box by frequent coatings of glycerine, and local contaminating influences. The novel

feature of the method is the use of a thin layer of sugar solution in a removable tray at the bottom of the cloud chamber for growing the ice crystals to visible size as they settle out of the subcooled fog, as shown in the photograph. The temperature of the copper tank is normally maintained at -10° to -12°C. The chamber is pressurized with outside air to any desired value by reference to a sensitive pressure gauge ("temperature difference" meter) calibrated in terms of a moist adiabatic temperature drop with sudden decompression. The temperature of the resulting subcooled expansion fog is assumed to be the sum of the wall temperature and the indicated temperature drop which is maintained for a few seconds before the air sample again approaches that of the chamber wall. The moisture for the adiabatically produced cloud is that contained in the original air sample plus evaporation from the sugar solution. The unit pictured includes an altimeter arrangement calibrated in terms of a correction factor to apply to the temperature drop on expansion when the equipment is used at elevations exceeding several thousand feet. In addition to the greater objectivity in detecting and counting of the resulting crystals, this technique permits reasonably rapid observations (compared with other current techniques) over a range of temperatures from the threshold value where one crystal per 10 liters appears to roughly -30°C where the number of ice crystals typically approaches or exceeds a thousand. Each observation normally requires 3 to 4 minutes, and an adequate number of readings to define a mean distribution with temperature usually requires from 60 to 90 minutes, depending on the variability of the counts.

Plans for the observational program are under development, and will depend in part on the results of further tests of the equipment. The quasi-laboratory and somewhat tedious nature of the observational procedure will doubtless make it difficult to undertake at most stations under current staffing limitations. However, if there are persons or offices that would like to consider participation in what promises to be an intriguing investigation, the Office of Meteorological Research would appreciate hearing of such interest. More detailed information on the project will be supplied to those expressing preliminary interest.

Another Use for River Forecasts

THE Federal-State Flood Forecast Center at WBAS Harrisburg was called upon recently to do a special type of river forecasting. During a January rise in the river, a tragic coal mine cavein occurred at Pittston, Pa., just above Wilkes Barre, on the Susquehanna. Twelve miners were trapped and presumed drowned. The break-through into the slope mine occurred in the channel on January 22 when the river was about three-fourths bankfull; it was not caused by overflow of the banks. An underground breakthrough into nearby mines was feared and an all-out effort was made to plug the break in the river bed. Thirty-eight full sized railroad gondolas were dumped into the opening along with 560 mine cars plus thousands of tons of other material. Closure was achieved on January 25.

To assist in rescue and salvage operations, it was important to know the amount of the flow into the mine. At the time of the disaster, river forecasters at Harrisburg were the only ones with the means to make this estimate. Others, "guessing" as to the total, made estimates ranging from several million gallons to 60 billion gallons. Harrisburg's estimate, based on the difference in the forecasted "natural flow" and the observed flow of the river at Wilkes Barre, gave a total of 35 billion gallons. These figures were used by State authorities and Civil Defense officials in formulating their plans of action. A later computation by the Bureau of Mines, based on the volume of mine shafts known or believed to be filled gave an estimated volume of 40 billion gallons of water in the mines.

Unusual Honor

AN unusual honor was accorded March 9, 1959 to E. L. Peck, Hydrologist in charge of the Salt Lake City Water Supply Forecast Unit. After visiting offices of the State Engineer and the Utah Water and Power Board, Mr. Peck made a brief stop at the visitor's gallery of the Utah House of Representatives. His entry was noticed by House Speaker Sheldon R. Brewster. In spite of the rushed final hours of the session, an invitation was extended for Mr. Peck to sit on the main floor, near the rostrum. When this invitation was declined due to press of other duties, the Utah House of Representatives interrupted their deliberations while the Speaker introduced Mr. Peck, and called attention to the recent Department of Commerce Silver Medal Award and the reasons for the award.

Advances in Electronics Aid Hydrology

THE Hydrologic Services Division has been able to take advantage of many new developments in electronics to improve field instrumentation. Several of the newer items provide for measurements of rainfall and river stages during storms and floods, and even to alert the observer during critical periods. The ideas being developed are not entirely new, and in some cases have been in the planning stages for years, but it is only recently that electronic components have been developed to fit hydrologic needs.

Surveys for sites began early in March for the installation of the first radar beacon rain gages. Actual installation started in April and will consist of 6 units. The radar beacon rain gage is a special type electronic rain gage developed by the Instrumental Engineering Division of the Weather Bureau. It is so constructed that the first .10 inch of rain will turn the beacon on. There the radar beam will trigger the beacon transmitter, which transmits a delayed pulse to the radar. This pulse shows as a blip on the radar scope and can be easily translated to accumulated amount of rain at the beacon site.

This system will permit evaluation of the precipitation pattern appearing on the radar scope, which will mean earlier river and flood forecasts for those areas subject to flash floods. Each hour that we can gain on such forecasts will mean the saving of life, and possible transfer of movable property to higher ground.

The alarm rain gage is to alert the observer for action, especially in areas subject to flash floods. This unit is a 3-stage transistor amplifier connected to several probes in the rain gage. When the water level reaches a predetermined level, an alarm sounds in the observer's home. The alarm sounds for 30 seconds, then a light comes on to conserve the battery but still indicates to the observer that a critical amount was reached if he failed to hear the buzzer. The observer can set the alarm for further measurements without going to the gage. The unit is powered by two No. 6 dry cells which will last about one year. The battery circuit is used to make it independent of power failures, and also to eliminate possible shock to the observer.

A remote-reading river gage for the end of the bridge, or even in the observer's home (if within about a mile), is being developed from a piece of equipment that has been used by the Weather Bureau since 1908. The circuit normally used in the telethermoscope (or Wheatstone bridge) will be tied into a remote gage by the use of a helipot. The helipot is a multiturn potentiometer (up to 50 turns) operating on a helix. The helipot will be operated by a float at the gage, and the reading will be given by balancing a similar unit at the observer's site, much the same as reading the telethermoscope.

The helipot is also being combined with a ratio meter to give a direct reading on a dial for ranges up to about 25 feet of stage. An alarm (similar to the one for rain gages) for river heights is also being incorporated in these gages for alerting the observer. These units work on batteries and the drain is small.

There are some locations where even wire remoted gages are not practicable, but radio could be used. A good example is Langtry, Texas, where the gage was on the Mexican side of the river, and the observer (sometimes the lady of the house) had to go to the gage by cable car (operated by hand) high over the Rio Grande. To eliminate this problem, a small radio transmitter of low power good for a couple of miles, using a helipot for controlling the oscillator similar to the radiosonde operation, plus a receiver for the observer's home, is under development by the Instrumental Engineering Division. A direct reading dial will be used for the readout by the observer. The frequency of reporting by such a gage will be controlled by a transistor clock and the water-height.

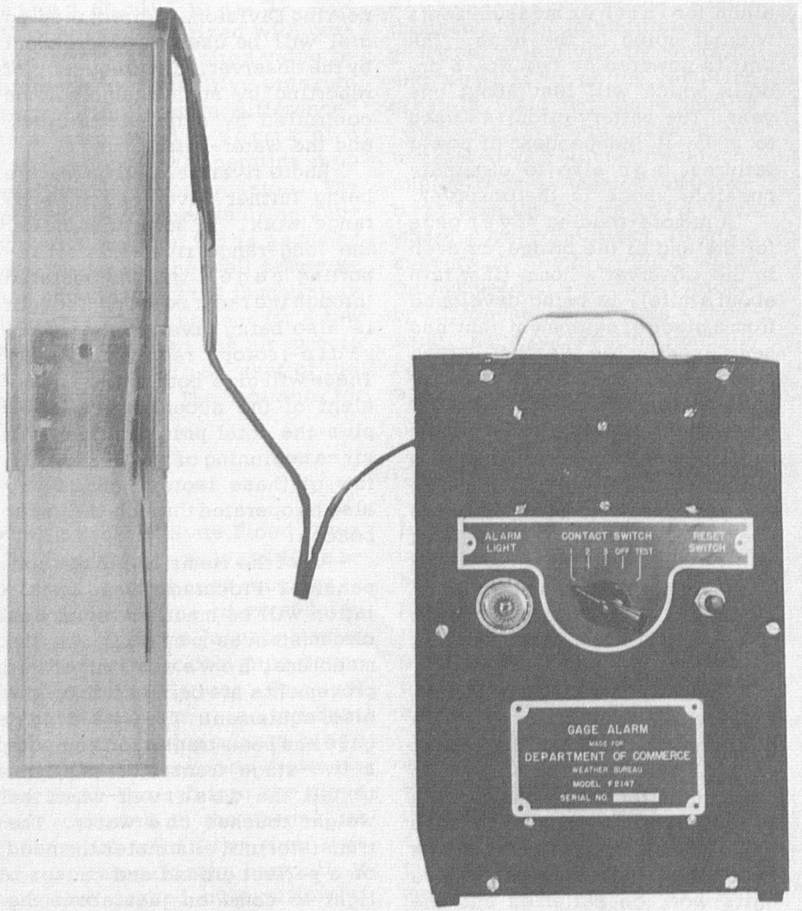
Radio river-rainfall gages are being further developed for long range work. In some instances, the long-range river-rainfall reporting gages will be operated through the radar beacon. Thought is also being given to the use of radio-isotope reporting gages. These will give both water equivalent of the accumulated snow, plus the total precipitation (WE) since beginning of the season. A few of these isotope gages may also be operated through the radar beacon.

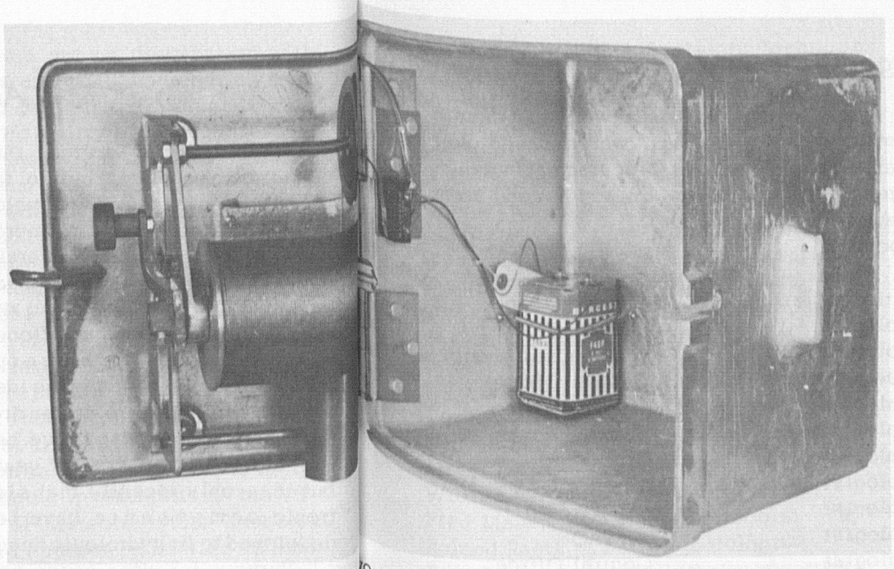
All of the items listed are expensive. Procurement and installation will be made as rapidly as circumstances permit. In the meantime, however, minor improvements are being made in the older equipment. The wire-weight gage has been transistorized with a two-stage transistor amplifier to tell the observer when the weight touches the water. The transistor unit eliminates the need of a perfect ground and causes a light to come on just above the dial when the weight touches the water. This makes night and early morning (plus foggy days) observations more practical. The observer does not need a flash light to follow the weight. This type gage is especially useful under most conditions when the check-bar reading is over about 45 feet.

Further reports on developments in this field will be made from time to time.

(See Center Spread)

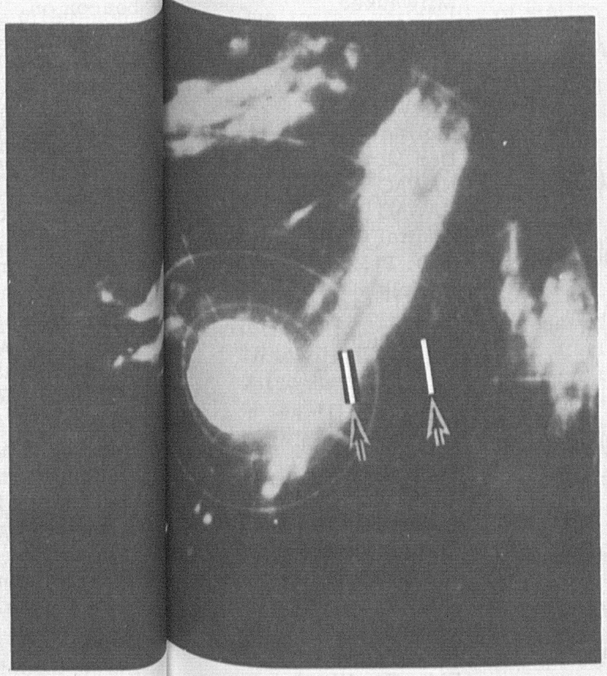
The alarm rain gage has a probe arrangement that can be fitted to any type gage. The probe can be set for any reporting criteria; the one shown above is for alarm at the 1, 2, and 3 inch levels. The probes are connected to a three stage transistor amplifier, which acts as a triggering device to sound the alarm. The transistor unit is always in circuit, but uses so little current that the battery normally lasts more than a year. Full instructions are attached to the alarm's case. The alarm is located in the observer's home, and is connected to these probes in the gage by a cable. The rain gage can be up to a hundred yards distant.



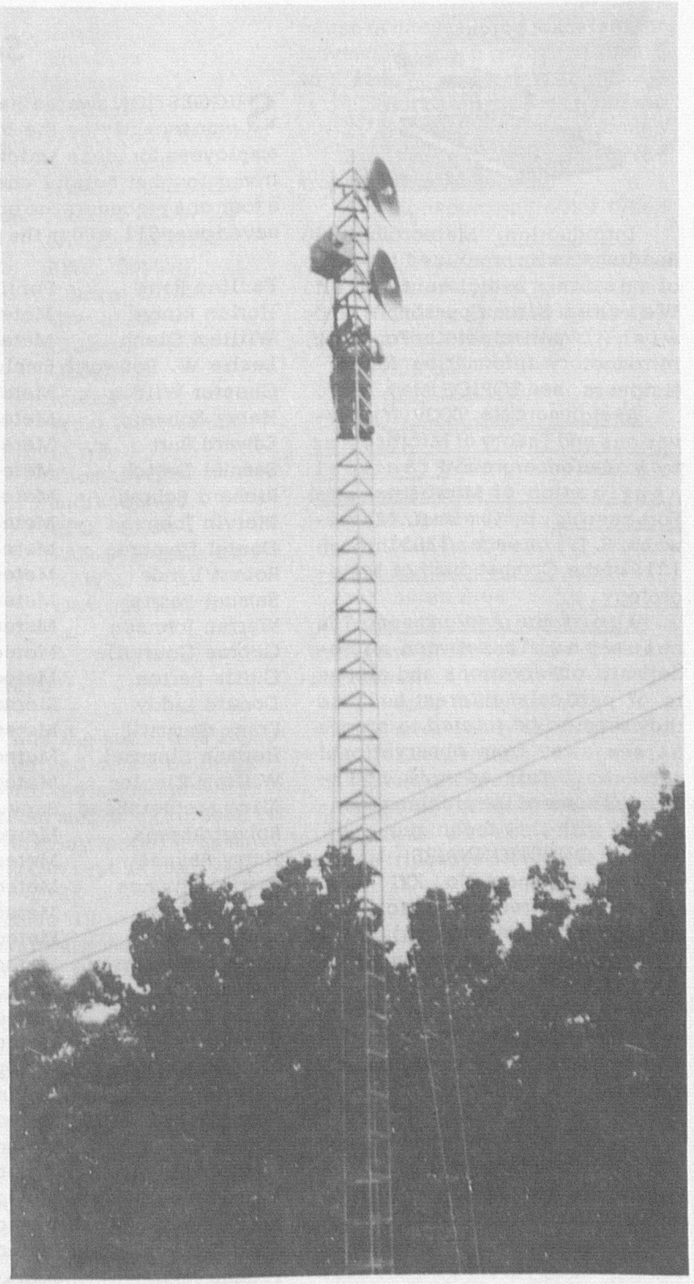


Transistorized Wire-Weight Rive
the small box just above and to
from the gage cover and back pla
mounting of the back plate to
circuit. No lengthy ground is r
trigger the transistor. The w
touches the water surface, th
railing will actuate the equip
contact. The light is mounted a
numbers at night even though t

o-stage transistor amplifier unit is contained in
cable drum. The cable drum support is insulated
able and weight forms one leg of a circuit. The
oncrete or steel), completes the other leg of the
e only a minute amount of current is required to
ered in the normal manner, and when the weight
w through the weight-cable, concrete piers and
urns on the light in the circuit to indicate water
and veedor counter for some help in reading the
primary purpose.



The radar beacon rain gage report appears on the radar scope as shown. The intense echo (outlined in black) shown within the rain gage and nearest the center of scope is the initial signal from the beacon indicating its exact location. The second intense echo is the report of the amount of rain, in this instance 0.60 inch. The amount of rain is determined by the distance between the two echoes, i.e., 10 miles on scope may equal .20 inch precipitation.



The radar beacon rain gage installation shown above was the pilot unit installed at Gambrill State Park in Maryland early in 1958 to prove its feasibility. Some modifications were made on the later models; the transmitter was relocated to the ground for better maintenance, and a Langbein type rain gage was installed. The Langbein gage is equipped with a standard 8-inch funnel draining into a tipping bucket of 0.1 inch capacity. The funnel will be heated for snow and glaze conditions.

Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXIV: Observations and Theory of Microseisms by B. Gutenberg and Practical Application of Microseisms to Forecasting, by James B. Macelwane, S. J., on pages 1303 through 1315 of the Compendium of Meteorology.

About the Assignment: The relationship between microseismic observations and storms is of particular interest because they seem to be related to storms at sea away from observational networks. This assignment indicates some of the problems connected with this technique.

QUESTIONNAIRE

Assignment No. XXI

(To be answered by participants after reading assignment.)

(For complete information, see TOPICS May 1957.)

Col. 61 What is the ratio of amplitudes between gravitational and elastic waves near the ocean's surface?

1. 10 to 1
2. 10^4 to 1
3. 10^6 to 1
4. 10^8 to 1

Col. 62 Approximately how many ergs/sec would a breakwater one km. long receive from waves four meters high, moving 10 knots (515 cm/sec) if the coefficient of friction (f) is 10^{-3}?

1. 5×10^{11}
2. 5×10^{14}
3. 3×10^{17}
4. 3×10^{18}

Col. 63 What is the probable

(Cont'd on page 73, col. 3)

Suggestion Awards

SUGGESTION awards have been won recently by the following employees for ideas which ranged from minor but helpful changes in a form or a procedure, to one which saved over $11,000 in the procurement of storm-warning penants and another which saved over $3,000 in the procurement of punch cards. The awards ranged from $10 to $280.

Pauline Best	Publications Clerk	Central Office
Harlan Rinard	Meteorologist	Eugene
William Glenn	Meteorological Aid	WRPC, Chattanooga
Leslie W. Bosworth	Employee Relations Officer	Central Office
Chester Wilcox	Meteorologist	Binghamton
Henry Schaefer	Meteorologist	Milwaukee
Edward Burt	Meteorologist	Cincinnati
Samuel Deitch	Meteorologist	Atlantic City
Richard Schrag	Meteorologist	San Antonio
Melvin Johnson	Meteorologist	NAWAC
Daniel Hembree	Meteorologist	Central Office
Robert Lynde	Meteorologist	Providence
Samuel Parrish	Meteorologist	Charleston
Warren Johnson	Meteorologist	Lakeland
George Courville	Meteorologist	Worcester
Curtis Barton	Meteorologist	Youngstown
Donald Liddy	Electronic Technician	WNA
Frank Gemmill	Meteorologist	Newark
Herman Stommel	Meteorologist	Seattle
William Ziegler	Meteorologist	RAO, Kansas City
Alice Mothershead	Supv. Teletypist	Central Office
Robert Ahrens	Meteorologist	Milwaukee
Harry Raynes	Meteorologist	Augusta
Patrick Hughes	Meteorological Aid	Central Office
Loren Waite	Meteorologist	Cairo
Curtis Eggers	Meteorologist	Las Vegas
Eugene Remington	Meteorologist	Moline
William Chapman	Meteorologist	Des Moines
Max Feinsilber	Meteorological Aid	NAWAC
Catharine Fean	Meteorologist	NAWAC
Frederick Fauntleroy	Property Clerk	Central Office
Lester Snyder	Procurement & Supply Asst.	RAO, Ft. Worth
Glen Sachse	Meteorologist	Norfolk
Glenn Lee	Meteorologist	Pendleton
William Grimes	Meteorologist	Great Falls
Dorsey Marting	Meteorologist	Winslow
Joe Fulks	Meteorologist	Chicago
Max Bankert	Meteorologist	Los Angeles
Yvonne Pugno	Clerk-Stenographer	RAO, New York
John Hope	Meteorologist	Memphis
Arthur Kline	Meteorologist	Tulsa
Leland Wilkins	Meteorologist	Pomona
Lester Hubert	Meteorologist	Central Office
Earl Bates	Meteorologist	Walla Walla
Donald Howard	Meteorologist	Denver
Sylvester Decker	Meteorologist	Escanaba
Leo Young	Electronic Technician	RAO, Ft. Worth
Hugh Carwile	Supply Clerk	RAO, Ft. Worth

Benjamin Carnahan	Electronic Technician	Salem
Ernest Amman	Meteorologist	Honolulu
Marvin Hofer	Meteorologist	Oakland
Robert Helbush	Meteorologist	Burlington
Roy Wells	Meteorologist	WRPC San Francisco
Myron Kerner	Meteorologist	Agana, Guam
Thaddeus Bilton	Meteorological Aid	NWRC, Asheville
Conrad Maney	Office Appliance Repairman	NWRC, Asheville
Frederick Warren	Microphotographer	NWRC, Asheville
Dwight Small	Meteorologist	AWP, Boston
Ernest Orr	Photolithographer	Central Office
Raymond Waldman	Meteorologist	Cleveland
George Polensky	Meteorologist	Chicago
Warren Fitzgibbons	Meteorologist	Goodland
Doris Warren	Secretary	Miami
Shirlee Bowne	Secretary	West Palm Beach
Albert Forst	Meteorologist	JNWP
William Wright	Meteorologist	Thomasville
Fred Maher	Meteorologist	Indianapolis
Roland Raetz	Meteorologist	RFC, Tulsa
Fern Reid	Clerk-Stenographer	RAO Salt Lake City
Wilson Tschiffely	Meteorological Aid	NAWAC
Charles Parker	Meteorologist	Daytona Beach

Magnetic Bulletin Board

SOME stations have indicated the desirability of obtaining magnetic bulletin or display boards for use in their programs. Due to the variability of station needs and available space, no general or standardized procurement of this item is considered appropriate. For those stations which have a need for this equipment, a description is provided in the following paragraphs of suggested materials for local fabrication of a magnetic bulletin board.

The base of the magnetic bulletin board consists of a sheet of 16 to 20 gauge, galvanized steel cut to the desired size and mounted on the wall or other support at the desired location. This may be mounted in a wood frame for improved appearance and safety, if desired, and the metal and frame may be painted to match or harmonize with the surroundings.

Small bar magnets are used to hold the display material against the base. One type is the "Magic Magnet," 7/8" x 1/8" x 3/16", which comes 10 to the package.

A possible alternate solution is the use of the back or side of an already available large, metal storage cabinet as a base in place of a special metal sheet.

For some display purposes, use of symbols attached to the small magnets may be appropriate.

Those stations having a need for and desiring to construct a magnetic bulletin board for their use should obtain any necessary procurement authority from their Regional Administrative Office.

Meteorological Study Program Notice

LABORATORY work is dropped from the minimum physics requirement for meteorologists.

cause of microseisms with regular movement and a period of from 2 to 6 sec.?

1. Surf against steep coasts
2. Ocean waves in hurricanes
3. Ocean waves in extratropical disturbances
4. Monsoon and other types of winds

Col. 64 What is the observed change in period of microseisms after traveling D kilometers? (T_o = period near source.)

1. $\frac{0.01\,D}{}$
2. $\sqrt{0.01D}$
3. $\sqrt{T_o^2 + 0.01D}$
4. $\sqrt{T_o^2 + 0.01D} - T_o$

Col. 65 Where is the andesite (Marshall) line?

1. Atlantic Area
2. Pacific Area
3. African Area
4. Asian Area

Col. 66 What location of a hurricane produces the greatest microseismic activity?

1. over rocky islands
2. over sandy islands
3. over water
4. no difference

Col. 67 What storm information can be determined from a single tripartite seismograph station?

1. Distance
2. Direction
3. Speed of Motion
4. All of these

Col. 68 On which type of surface would the largest microseismic amplitudes be observed?

1. solid rock
2. dry sand
3. wet sand
4. no difference

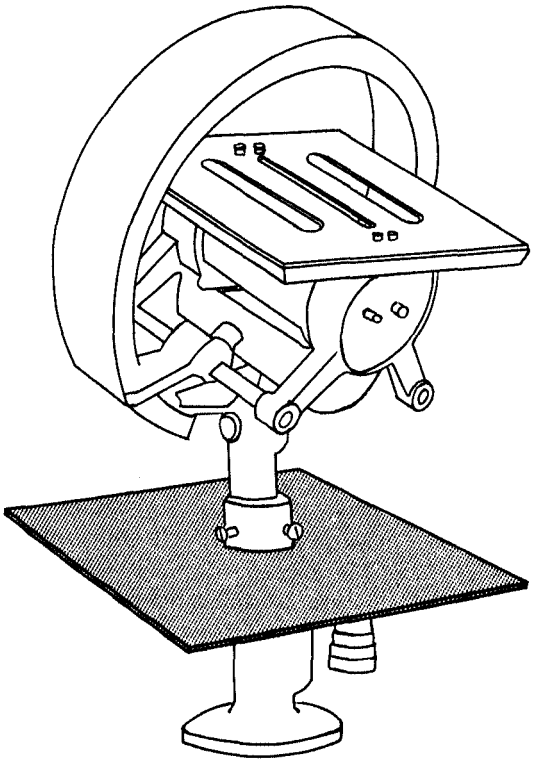
Col. 69 What is the relationship between microseismic wave amplitudes and the energy of the ocean waves on the coast?

1. directly proportional
2. inversely proportional
3. proportional to the square
4. proportional to the square root

Col. 70 Which one of the following most nearly describes elastic waves in the ground named after Rayleigh:

1. body waves with motion of particles describing ellipses
2. body waves with motion of particles perpendicular to direction of wave propagation
3. surface waves with motion of particles describing ellipses
4. surface waves with motion of particles perpendicular to direction of wave propagation.

Increasing the Sensitivity of Photoelectric Sunshine Switch



PHOTOELECTRIC sunshine switches at certain installations sometimes lack the necessary sensitivity to cut in and out with changes from shadow to sunshine and the reverse. This is especially true during marginal conditions. These switches are frequently mounted above roofs with surfaces which are highly reflective due to the roof material itself, or the presence of a snow cover on the roof. This reflection sometimes lights both cells of the switch from below sufficiently that the differential of light from above is too small to make the switch function as intended.

To remedy the above situation, place a piece of plywood or similar material immediately below the switch as shown in the drawing. This can be accomplished by boring a hole just the size of the support in the center of the board. The board should be of sufficient size and shape that it will not allow light from below to be reflected to the underside of the photo cell. The correct size can best be determined by the individual making the installation. The top surface of the board should be painted dull black to minimize reflection.

This inexpensive on-station modification could materially increase the sensitivity of sunshine switches at some stations, especially during periods when there is a snow cover.

Unused Sick Leave

THE following list of employees have 1000 hours or more of unused sick leave.

Annette, Alaska
N. Lester Troast, Jr.

Asheville, N. C. NWRC
Dorothy W. Rembert
Dick M. Whiting

Boston, Mass. WBAS
Robert E. Pike

Cincinnati, Ohio
Emmett E. Baldwin
Escal S. Bennett
John R. Burke
Ralph W. Carey
Edward T. Clapp
Riley M. Lorentz
William R. Long
George R. Marth
Delance O. Martin
J. Harold Nickles
William E. Ray
Jere B. Scott
Harold E. Shipley
Joseph J. Sopko

Cleveland, Ohio WBAS
William E. Kennedy
John R. McClain
Paul A. Montgomery

Eureka, Calif. WBO
Sidney O. Howick

Flint, Michigan WBAS
Paul E. Hammett

Greensboro, N. C. WBAS
James P. Molen
Edward L. Paquet

Kansas City, Mo. RAO
John T. Reed

Lincoln, Nebraska WBO
Robert E. Nelson

Medford, Oregon WBAS
William J. Koepke
Leo L. Peart

Miami, Fla. WBO
Francis J. Drybala

Phoenix, Arizona WBAS
James R. Miller
Pomona, Calif. WBO
Robert M. Reece
Providence, R. I. WBAS
John J. Lavin
Raleigh, N. C. WBAS
Dayton B. Stone
Topeka, Kansas WBAS
Bertel E. Hall
James A. Kuhn
Trenton, N. J. WBO
Donald V. Dunlap
San Francisco, Calif. WRPC
George H. Barnes
Thomasville, Ga. WBO
William R. Wright

Forecasters' Forum

Atmospheric Compression Waves Caused by Supersonic Jet Aircraft

Dear Sir:

A "mysterious explosion" occurred over and around Toledo, Ohio about 4:20 p.m. EST on February 11, 1959.

The local WBAS, as well as the Ohio Air Guard, the local newspapers, the Police, and Fire Departments, was engulfed by telephone calls.

This is the first time the "sonic boom" has involved our fair city, although we are on the border of two corridors for jet operations. Also, according to the January 1959 issue of Air Force magazine, central Ohio is one of about five U.S. areas that will have to learn to live with the sonic boom. Other areas are in New England (western Massachusetts and southern Vermont), "the St. Louis Region, central Texas, and southern California." Further, according to the Air Force magazine article, "Learning to Live with the Sonic Boom," some "thirty cities will be used as targets in simulated bombing raids carried out at supersonic speeds." ..."In most cases there will be ample notice to the public via newspapers and radio, of impending exercises."

"What is the pressure from a sonic boom?

"Not more than five pounds a square foot, ten times that of a thunderclap or five times the noise created in a boiler factory.

"The sonic boom, loud enough to rouse an average sleeper or scare an average baby, is going to shake some of America's biggest cities with no respect or consideration for the hour, the day, or the physical condition of man or beast.

"But, except in rare cases, it will only assault your eardrums. It isn't going to crack plaster or start any earthquakes. It may break a few windows, but that will be about all."

Since Weather Bureau stations will probably be on the receiving end of many requests for information, both popular and scientific, many Weather Bureau personnel may be interested in the article quoted above, and similar articles.

John B. Keller
WBAS
Toledo, Ohio

Quotations are reprinted by permission from AIR FORCE/SPACE DIGEST and author Mr. Claude Witze, Senior Editor.

Skill-Less Forecasts (Weather Previews)

Editor's Note: The following letter expresses a viewpoint that differs from that expressed in the original article in the November 1958 Forecasters' Forum. Does anyone else wish to contribute to this discussion?

Dear Sir:

If I remember right, the Rose Bowl game of January 1, 1955 was played in a "heavy mist." Before the game was half over, one could see water standing in the footprints (even showed up on TV). It would be difficult to explain the value of "Weather Previews" to anyone that sat through that downpour.

Also, one may wonder if the Battle of Waterloo was timed by a generally accepted "Weather Preview."

W. O. Peterson
WBAS
Raton, New Mexico

Use of WB Form 038-9

IT is desired that the use of WB Form 038-9 "Request for Publications" be limited to requests for U. S. Government publications (including Bureau publications) wanted for retention. The form should be forwarded to the Central Office Publications Section. The Central Office Library reports that many stations have been using the form for requesting non-government publications, such as textbooks and dictionaries, and even material wanted on loan. A memorandum to the Central Office Library should be used for textbooks and other non-government material wanted for retention, since it is important for the Library that the author be stated, in addition to title, quantity and, if applicable, series, number or date.

Published Articles by WB Personnel

J. F. Andrews, "The Weather and Circulation of May 1958 - Reversal from a Long-Period Regime," Monthly Weather Review, vol. 86, No. 5, pp. 177-185.

Geirmundur 'Arnason, "A Convergent Method for Solving the Balance Equation," Journal of Meteorology, vol. 15, No. 2, Apr. 1958, pp. 220-225.

John S. Arnett, "Principal Tracks of Southern Hemisphere Extratropical Cyclones," Monthly Weather Review, vol. 86, No. 2, Feb. 1958, pp. 41-44.

Harold S. Ayer, "A Sample of Single-Theodolite Wind Errors in the Coast Range of Oregon," Bulletin of the American Meteorological Society, vol. 39, No. 5, May 1958, pp. 279-281.

H. A. Bedient and G. P. Cressman, "An Experiment in Automatic Data Processing," Monthly Weather Review, vol. 85, No. 10, Oct. 1957, pp. 333-340.

R. G. Beebe, "The 1956 Tornado Research Airplane Project," Bulletin of the American Meteorological Society, vol. 38, No. 10, Dec. 1957, pp. 575-578.

R. G. Beebe, "Tornado Proximity Soundings," Bulletin of the American Meteorological Society, vol. 39, No. 4, Apr. 1958, pp. 195-201.

R. G. Beebe, "Tornadoes During 1957," Weatherwise, vol. 11, No. 1, Feb. 1958, pp. 12-15, 37-38.

Milton L. Blanc, "On the Relationship of Soil Temperatures to Soil Moisture Measurements," WMO Commission for Climatology, 2nd Session, Washington, D. C., Jan. 1957. Papers Ccl II/Doc 42.

Glenn W. Brier, with Hans A. Panofsky, Some Applications of Statistics to Meteorology, The Pennsylvania State University, University Park, Pa., 1958, 224 pp.

Ivan W. Brunk, "Weather Rambles," Weatherwise, vol. 11, No. 2, pp. 56-57, No. 3, pp. 92-93.

W. T. Chapman and B. Dubofsky, "Northeastward Moving Lows over Eastern United States, November 14-19, 1957," Monthly Weather Review, vol. 85, No. 11, Nov. 1957, pp. 373-382.

John R. Clark and William O. French, "Some Interesting Aspects of a Subtropical Depression, May 18-28, 1958," Monthly Weather Review, vol. 86, No. 5, May 1958, pp. 186-196.

Walter R. Davis, "The 1957 Hurricane Season," Weatherwise, vol. 11, No. 1, Feb. 1958, pp. 16-19, 36-37.

Carlos R. Dunn, "Automatic Incorporation of Numerical Short-Range Prognoses in 5-Day Circulation Forecasts," Monthly Weather Review, vol. 86, No. 2, Feb. 1958, pp. 45-52.

C. L. Cave, with W. E. Hubert and P. M. Wolff, "A Comparison of JNWP Trajectory Forecasts with Transosonde Flights," Monthly Weather Review, vol. 86, No. 2, Feb. 1958, pp. 53-59.

Carlos R. Dunn, "The Weather and Circulation of December 1957-High Index and Abnormal Warmth," Monthly Weather Review, vol. 85, No. 12, Dec. 1957, pp. 409-416.

Donald S. Foster, "Thunderstorm Gusts Compared with Computed Downdraft Speeds," Monthly Weather Review, vol. 86, No. 3, Mar. 1958, pp. 91-94.

Howard M. Frazier, "The Weather and Circulation of October 1957 - A Month with a Record Low Zonal Index for October in the Western Hemisphere," Monthly Weather Review, vol. 85, No. 10, Oct. 1957, pp. 341-349.

Sigmund Fritz, "Absorption and Scattering of Solar Energy in Clouds of 'Large Water Drops' - II," Journal of Meteorology, vol. 15, No. 1, Feb. 1958, pp. 51-58.

Sigmund Fritz, "The Polar Whiteout," Weather, Vol. XII, No. 11, Nov. 1957, pp. 345-348.

Sigmund Fritz, "Radiational Inversions and Surface Temperature Changes," Monthly Weather Review, vol. 86, No. 4, Apr. 1958, pp. 129-131.

John B. Fuge and John M. Kipper, Jr. "An Early-Season Snowstorm Along the Atlantic Coast, December 4-5, 1957," Monthly Weather Review, vol. 85, No. 12, Dec. 1957, pp. 417-422.

R. C. Gentry and R. H. Simpson, "Hurricanes," Report of the Smithsonian Institution, 1956, Washington, D.C., 1957, pp. 301-328.

Frank Gifford, Jr., "Further Data on Relative Atmospheric Diffusion," Journal of Meteorology, vol. 14, No. 5, Oct. 1957, pp. 475-476.

Frank Gifford, Jr., "Relative Atmospheric Diffusion of Smoke Puffs," Journal of Meteorology, vol. 14, No. 5, Oct. 1957, pp. 410-414.

Marshall F. Grace and Vernon G. Bohl, "Movement of an Upper-Air Low over the Western United States, October 16-24, 1957," Monthly Weather Review, vol. 85, No. 10, Oct. 1957, pp. 350-356.

Raymond A. Green, "The Weather and Circulation of March 1958," Monthly Weather Review, vol. 86, No. 3, Mar. 1958, pp. 100-106.

Ross Gunn, "Electrification of Aerosols by Ionic Diffusion," American Journal of Physics, vol. 25, No. 8, Nov. 1957, pp. 542-546.

Louis Harmantas and S. G. Simplicio, "A Suggested Approach to the Problem of Providing High-Altitude Wind Forecasts for Jet Transport Operations," Bulletin of the American Meteorological Society, vol. 39, No. 5, May 1958, pp. 248-252.

G. Daniel Hembree, "Effect of the State of the Ground on the

Local Heat Balance," Monthly Weather Review, vol. 86, No. 5, May 1958, pp. 171-176.

D. M. Hershfield, L. L. Weiss, and W. T. Wilson, "Synthesis of Rainfall Intensity Frequency Regimes," Proceedings of American Society of Civil Engineers, vol. 81, Sep. No. 744, July 1955 and "Discussion Closure" on above paper vol. 82, No. HY4, pp. 1041-1043, August 1956.

(Cont'd next month)

Length of Service Awards

25-Year Awards

Central Office
Faye M. Lacy
Thomas J. O'Connell

15-Year Awards

Asheville, N. C.
Grace Y. Bainbridge
Frances L. Biddix
Samuel C. Byrd
Mildred I. McCarson
Earl M. Ritchie
Birmingham, Ala.
Theo B. Smith
Boise, Idaho WBAS
Alvin E. Loseke
Boston, Mass. WBAS
Joseph J. Muzzioli
Buffalo, N. Y. WBAS
Edward J. Sarnowski
Cape Hatteras, N. C.
Damon M. Gray, Jr.
Central Office & Overseas
David I. Blumenstock
Alfons S. Christianson
Hubert C. Keith
Clarence L. Kibler
Reuben Perez
Arthur C. Peterson
Lulu J. Smith
Wayne F. Staats
Lillian S. Tomer
Charleston, S. C. WBAS
Annie L. Gale
El Paso, Texas
Boyden Eckhardt
Greenville, S. C.
Lyle J. Hinton
Key West, Fla.
Jarvis J. Younger
Miami, Fla. WBAS
Ophelia Tisdale
Miami, Fla. WBO
Martha C. Spector
Nantucket, Mass. WBAS
Alfred H. Geddes
New Orleans, La. WBAS
Walter R. Hall
New York, N. Y. WBO
James K. McGuire
Arthur J. Pagnozzi
Portland, Oregon RFC
Robert W. Hullinger
Portland, Oregon WBAS
Mildred V. Bergstrom
Providence, R. I.
Harry J. Pause
Raleigh, N. C.
Dayton B. Stone, Jr.
Santa Maria, Calif. WBAS
Wilbur J. Lewis
Paul S. Moore, Jr.
Seattle-Tacoma Airport
Ruben "SG" Schulz

NEW MIC

OMAR I. SINCLAIR of the River Forecast Center at Portland, Oregon has been selected to succeed Charles T. Cochrane as Meteorologist in Charge at WBAS Elko, Nevada.

Mr. Sinclair entered the Bureau at Fresno, California August 21, 1939 with subsequent assignments at Portland and Troutdale, Oregon. During World War II he served in the U. S. Navy. In April 1957 he was given a $300 Superior Performance Award in recognition of outstanding work as Substation Inspector.

RETIREMENTS

Samuel Deitch

SAMUEL DEITCH, Meteorologist in Charge, Atlantic City, retired February 28, bringing to a close a career embracing nearly 48 years of uninterrupted and devoted public service. Known affectionately as "Sunny Sam," Mr. Deitch combined his many years of experience as a public servant with outstanding community service for which he is held in high regard by all whom he has served.

A native New Yorker, Mr. Deitch attended City College New York and entered the Weather Bureau at New York City on March 15, 1911. In 1912 he began a series of moves which took him to Binghamton, San Antonio, Philadelphia, and back to New York in 1915 where he served for 17 years, assisting in the rapid development of the Bureau's facilities and proceeding to become a highly distinguished citizen in his home community of Coney Island. In 1927 Mr. Deitch was honored at a testimonial dinner by the people of Coney Island in appreciation for outstanding service to his fellow men.

Mr. Deitch served as MIC at Atlantic City from 1932 until his retirement, 26 years of impressive service which earned for him a reputation as one of the country's most accommodating public officials. The New Jersey beach area is visited by millions of people annually, and the peak of the tourist season is normally reached during the months when hurricanes are most likely to threaten that section. This magnified Mr. Deitch's heavy responsibilities, since the many recreational interests in the area, as well as the general public, depended upon his warnings of the approach of a hurricane and made their plans accordingly. Whenever a hurricane threatened Atlantic City, or nearby areas, Mr. Deitch spared no effort to insure

that everyone was informed of the danger. During periods of emergency, he increased the number of broadcasts going on the air every hour at the height of the storm emergency in order to reach and warn those who were isolated and could be reached only by radio communication.

Some idea of the esteem in which Mr. Deitch is held may be gained from a review of the numerous commendations and awards he has received through the years. In 1941 he received Atlantic City's Courtesy Prize for "Outstanding acts of courtesy to visitors;" in 1945 he received a commendation from Ocean City, Maryland, residents which read in part: "On behalf of the businessmen who have a great deal at stake, please accept our thanks for the complete and accurate weather reports issued during the recent hurricane threats." In 1948, the National Headquarters of the American Red Cross officially congratulated Mr. Deitch on outstanding service to the public; in 1954, he was awarded a scroll from HOLIDAY magazine for his contribution to the vacationing public through his service as the "Atlantic City Weatherman." Also, in the same year he received a commendation from the Chairman of the Atlantic City Centennial and Diamond Jubilee as a "public servant whose gracious and friendly manner in extending the cooperation of the Weather Bureau to the public was unsurpassed." In 1955 a special commendation was tendered Mr. Deitch by the editor of the Pleasantville, New Jersey, PRESS, in connection with his outstanding performance during the Hurricane "Connie" emergency. His splendid efforts were officially recognized in 1956 when he was awarded the Department of Commerce Silver Medal for Meritorious Service.

In addition to his official services, Mr. Deitch has been extremely active in civic affairs, and has achieved a state-wide reputation as a speaker at businessmen's clubs. An affable, dependable, sincere and very service-conscious individual, Mr. Deitch spent freely of his time, day or night, in providing weather or warning service, engaging in civic activities in support of worthwhile public causes, and participating in volunteer work for charitable organizations. In addition, the guidance, encouragement, and example he has furnished along the way to many of our younger men have contributed materially to several notable Weather Bureau careers. Men like Mr. Deitch who have given their all to the public service have as their reward the esteem, respect, and admiration of their colleagues, as well as a record of excellence which will continue to provide a source of tremendous satisfaction through the years.

Mr. Deitch will continue to make his home in Atlantic City. His mailing address is 1 South Annapolis Avenue, Apartment C-1, Atlantic City, N. J.

Harry C. DeMent

HARRY C. DEMENT, who retired from the Bureau on May 31, 1948, after 43 years of service, died February 23 in Parkersburg, West Virginia, at the age of 71. Mr. DeMent entered the Weather Bureau June 1, 1905. His entire service was at the Parkersburg station with the exception of 10 months in the Army during World War I.

Mr. DeMent is survived by his wife, who lives at 1108 Laird Avenue in Parkersburg, and one son, William, of Dayton, Ohio.

Ross H. Harris

ROSS H. HARRIS of the Central Office Procurement and Supply Section retired March 31 after nearly 18 years of government service. Mr. Harris entered the Weather Bureau as a laborer on February 21, 1942.

A native Washingtonian, Mr. Harris was born March 16, 1899. He served overseas in the Army during World War I, and following his discharge from the military service in 1919, he was employed in private industry until he joined the Bureau.

Mr. and Mrs. Harris plan to remain in the Washington area after his retirement. His mailing address is 5001 17th Road, North Arlington, Virginia.

John R. Keefe

JOHN R. KEEFE, Voucher Examining Supervisor, who has been with the Weather Bureau since January 13, 1928 when he transferred from the Treasury Department, retired March 31. Mr. Keefe was one of the first Weather Bureau employees to receive the new length of service emblem, having been presented his 40-year pin by the Secretary of Commerce at the Department's Annual Awards Ceremony on February 16.

A native of Rhode Island, Mr. Keefe graduated from Rogers High School in Newport in 1913, coming to Washington a year later to accept his first civil service position as a stenographer with the Department of Agriculture. He served in the Army during World War I, and shortly after his discharge from military service, he transferred to the Treasury Department as an auditor, where he served until joining the Bureau in 1928.

Mr. Keefe is a member of the Curley Club of Washington, an organization which raises funds to provide scholarships for needy students. His hobbies include writing poetry and studying English literature. He plans to develop his writing skill after retirement with a view to engaging in newspaper or periodical work. For the present the Keefes will maintain their home in Washington at 2820 Myrtle Avenue, N. E. Their daughter, Alida Ann, attends Catholic University, where she is studying for her M.A. degree

in Music Education. Mr. and Mrs. Keefe look forward to eventually making their home in North Carolina or Florida.

Vernon N. Wolf

ON December 23, 1915, a young lad just turned 17 reported to the Captain of the Watch for duty as messenger boy in the Weather Bureau. On March 31, 1959, retirement from his position as Administrative Assistant in the Office of the Chief of Bureau terminated a career of more than 43 years of service for Vernon N. Wolf.

A native Washingtonian, Mr. Wolf attended the District's Business High School, Emerson Institute, and Temple Business College. First employed as a messenger, Vernon's capabilities soon outgrew his responsibilities and in 1917 he was promoted to clerk in the Office of Mr. E. B. Calvert, Chief Clerk, at double his beginning messenger salary of $450 per annum. From 1919 to 1929 he was secretary to Chief Clerks Calvert, Weightman, and Weber. Then came three years as Personnel Appointment Clerk under Mr. C. W. Rohrer, followed by a year as Travel and Instructions Clerk. Mr. Wolf later served as secretary to three Chiefs of Bureau—Drs. Marvin, Gregg, and Reichelderfer. As Administrative Assistant in the Office of the Chief of Bureau since 1941, he has become a familiar figure to Central Office employees as well as visitors from the field.

Mr. Wolf plans to remain in Washington after retirement. In discussing his plans he commented that he believed he could become accustomed to being a perennial vacationer. We are certain that he can and equally certain that he will find his well-earned retirement opening the way to many pleasant new activities. Friends may continue to contact Mr. Wolf at 5070 MacArthur Boulevard, N.W., Washington 16, D.C.

Deaths

Alice C. Dundas

ALICE C. DUNDAS, Meteorological Technician, WBAS Juneau, died February 26 in Pasadena, California, where she had been receiving treatment for the past several months.

Mrs. Dundas was born September 17, 1901, in St. Paul, Minnesota and attended St. Theresa College of Winona, Minnesota, and Cornell University. She entered the Weather Bureau as an observer at International Falls on February 2, 1943, and also served at La Crosse prior to accepting transfer to Alaska in July 1945. She and her husband, Frank, worked as a man-wife team at Gambell and at Barrow, where Mr. Dundas was Observer in Charge. Mrs. Dundas has served in Juneau since June 1951.

Mr. Dundas will continue to make his home in Juneau where he is employed in private industry. His mailing address is P.O. Box 1586, Juneau. Their son, Richard, has completed four years at Stanford University and upon his return from duty in the Marine Reserve Corps this fall, he plans to complete his work for a degree in Petroleum Engineering.

Gerard R. Fierle

GERARD R. FIERLE, Official in Charge at Burrwood, died of a heart attack February 28 at the age of 38.

Mr. Fierle was born in Detroit, Michigan, on October 16, 1920. He entered the Bureau as a Meteorological Aid at Barrow on May 17, 1948. He also served at Fairbanks, Brownsville, and Jackson, as well as two tours of duty in the Arctic and one in Antarctica.

Mr. Fierle's nearest surviving relative is a brother, W. A. Fierle, 1818 Mayflower Street, Dallas, Texas.

Walter R. Post

WORD has been received that Walter R. Post, who retired from the Bureau on disability May 9, 1957, died December 14, 1958, in Florida at the age of 53. Mr. Post was employed at the National Weather Records Center in Asheville at the time of his retirement (See June 1957 TOPICS).

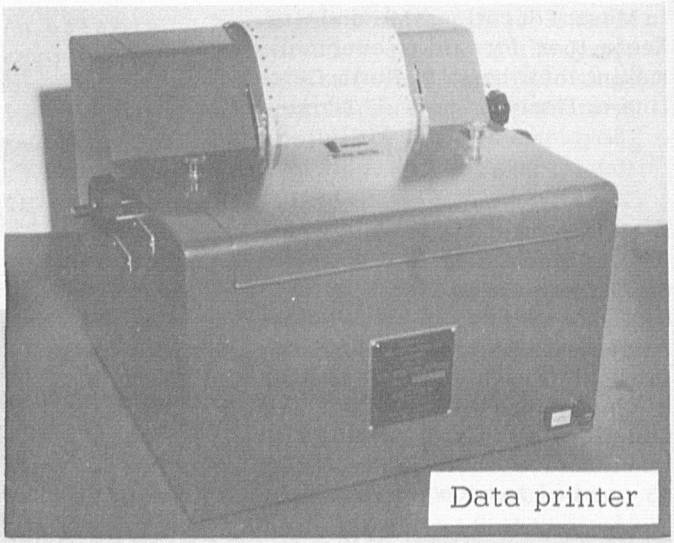
Mr. Post is survived by his wife, Miree Post, a Weather Bureau employee at the National Hurricane Research Project in Miami; three daughters; and a son.

Thomas L. Williams

THOMAS L. WILLIAMS, Radiosonde Repairman at the RRC, Joliet, died of a heart attack February 23, at the age of 46.

Mr. Williams was born in Altoona, Pennsylvania, and lived there until his entry into military service during World War II. He served in the Air Force as a Radiosonde Operator and Weather Equipment Maintenance Technician. Upon discharge in 1946 he was appointed as a Meteorological Aid at Washington National Airport. He transferred to Joliet in April 1946, when the Reconditioning Center was still in the experimental stage, and assisted in its subsequent development and expansion.

Mr. Williams is survived by his wife, Mrs. Harriet R. Williams, 2434 Burbank Street, Joliet.



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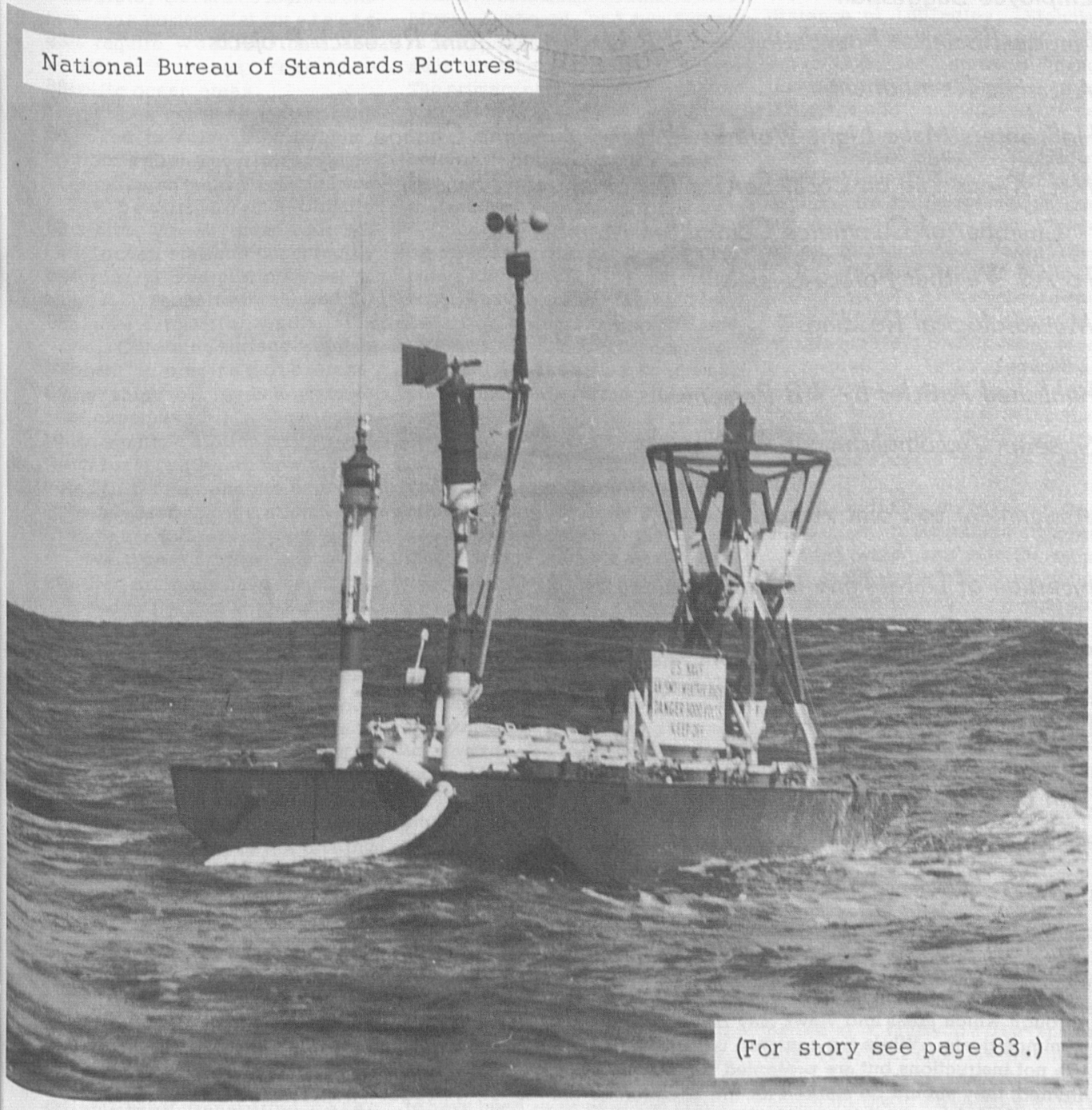

(For story see page 83.)

Automatic Marine Weather Station Model AN/SMT-1

Volume 18 Number 5

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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.

Marine Automatic Weather Stations

By J. A. Shirley
(Marine Observations Unit)

OBTAINING weather reports from infrequently traveled ocean areas is a major problem to meteorologists, climatologists, and numerous commercial interests who require weather data and weather warnings from these specific ocean areas.

Various schemes have been proposed to solve this problem, most of which require considerable research and investigation before becoming operationally feasible. Among these are: (1) fixed ocean stations occupied by vessels (2) Fixed platforms set in shoals ("Texas towers"), and (3) marine automatic weather stations. Obtaining surface weather information from remote areas using ships or Texas towers is very expensive. Marine automatic weather stations that are much less costly are now undergoing final tests and are expected to be released for operational use in the near future.

Two types of marine automatic weather stations have been developed by the National Bureau of Standards for the U. S. Navy Bureau of Aeronautics, the "spar-buoy" type and the "boat" type. These stations have undergone numerous tests; the most notable of these tests are the hurricane "GRETA" test of 1956 and the "Gulf of Mexico" test of 1958. The purpose of hurricane "GRETA" test was to determine the value of the drifting weather buoy station as an instrument for detecting hurricanes and to establish the durability and performance of the buoy under hurricane conditions; the purpose of the "Gulf of Mexico" test was to explore the possibility of mooring the automatic weather stations in deep water, to monitor scheduled broadcasts, to establish reliability of transmitted data, and to determine the serviceability of the equipment.

On August 27, 1956, the U. S. S. Atakapa departed Norfolk, Va. with five automatic weather buoys Model 3 aboard, and two Bureau of Standards engineers along to supervise the placing of the buoys. The primary purpose of the mission was to set five automatic weather buoys adrift in predetermined locations in areas of potential hurricane storm tracks and to insure that each of the five stations was in good operating order before departing from the area. One buoy, identified as the "Norfolk" buoy, was set adrift approximately 240 miles east southeast of Cape Hatteras, N.C., the second approximately 300 miles southwest of Bermuda, the third (the "San Juan" station) 300 miles north of San Juan, P. R., the fourth 400 miles northeast of Balboa, Panama, and the fifth (the "Key West" station) approximately 300 miles south of New Orleans, La. Each of the buoys transmitted weather reports for an interval of four minutes every six hours on a staggered schedule. Signals from each station were monitored on the ship's radio when possible. The program was also designed to test the ability of land stations to monitor and interpret the signals. Each station was timed to transmit on a six-hour schedule which included the following weather elements; barometric pressure, wind direction and speed, air and water temperature.

Consistent ground wave signals on board ship were received from all except the last station for a maximum distance of 300 miles. Signals from the last station were heard on the ship's radio at a maximum range of 180 miles. The "Key West" station was known to have been in or near the center of a tropical Gulf storm, while the "San Juan" station was known to be in or near the center of hurricane "GRETA". At this time, signals were heard from it at a distance of 100 miles. Signals from the "Norfolk" buoy were well received by land stations during this time. The operational battery life of the stations was considered to be 6 weeks.

A group of National Bureau of Standards automatic weather buoy experts, a mooring specialist from Woods Hole Oceanographic Institution, and the author, representing the Weather Bureau, departed Mobile, Alabama aboard the USCGC Blackthorn for the "Gulf of Mexico" test and mooring area on August 11, 1958. Secured in an up-right position aboard were four Model 3 marine automatic stations, cables, anchor equipment, and six sets of cable flotations.

The primary purpose of this mission was to moor three stations in deep water and monitor them throughout the hurricane season. To date of sailing, the deepest mooring of a weather station, accomplished by the National Bureau of Standards, was approximately 60 feet of water, therefore, the undertaking to moor these stations in 12,000 feet of water was no simple venture. While underway to the mooring area the project engineers with the assistance of the ship's crew prepared all the cable equipment for mooring.

Upon reaching mooring location number 1, at 25°N. and 90°W. two moorings were attempted, one a wire cable and the other a combination of 3/4 inch polypropylene and dacron line. The first cable parted at a faulty cable splice after 5000 feet of cable was lowered. Attempts to relieve the strain on the cable to permit clearing the U-bolts on the splice

through the snatch blocks caused excessive strain on the splice. The second mooring was made ready. Two (3'x3'x3') floats filled with styrofoam were attached to the surface end of the line, lowered over the side and the cable paid out by hand. Upon reaching the end, the anchor equipment was attached and allowed to drop to the bottom. The second mooring was successful. A first-class (channel) can buoy was attached to the mooring prior to proceeding to the second location. Upon returning to this location a few days later, a marine automatic weather station was attached with a 300-foot buoyant cable to the can buoy.

The second mooring location was at 25°N. and 92°W. Upon reaching this location a wire cable was paid out in the same manner as the plastic line of the first location. The automatic weather station was attached to a surface float and checked out prior to proceeding to the third location.

Upon reaching the third mooring location at 25°N. and 94°W. the anchor equipment was attached to the bottom end of a steel cable, placed over the side and reeled out with the aid of the ship's winch. Two floats were attached to the surface end of the cable, placed over the side, and cable blocks released allowing the anchor equipment to drop freely to the bottom. Although the depth charts indicated about 12,000 feet of water in the proposed mooring area, the anchor did not reach bottom. Hoping to find a high peak on the bottom, suitable for anchorage, the mooring was towed slowly for seven hours. Twisting of the cable while in tow caused the cable to part. A marine automatic weather station was placed over the side attached to a sea anchor and checked out prior to departure from the area.

Marine weather station on location number 3 operated efficiently between August 15 and September 15, 1958. It has not been heard from since. The weather station at location number 2 operated efficiently from August 13 to October 1, 1958. The station has not been heard from since. A National Bureau of Standards servicing crew attempted to locate it in October 1958. Poor visibility and heavy seas prevented its location. Radio signals from the station on location number 1 were only heard for 24 hours after installation. On September 20 it was observed that the station was not on location and that the steel cable had parted at its junction to a swivel on the buoy collar.

An improved version of the buoy automatic weather station is the "boat" type. The boat is constructed of aluminum. It is 20 feet long and 10 feet wide. The two masts and four watertight wells extending below the deck hold the meteorological and electrical equipment. Each well unit may be removed and replaced independently. A unique mooring gear permits the station to be moored in most any depth desired. Five variables are measured by means of sensing elements. These are: air temperature, water temperature, barometric pressure, wind speed, and wind direction. These data may be transmitted by code at uniform intervals of three or six hours as desired.

The ocean-based automatic weather station was established at mooring location number 1 (25°N. and 90°W.) in the Gulf of Mexico on September 21, 1958 and operated successfully for a month. It was re-established in October by replacing a broken antenna and transmitted observations at six hourly intervals until December 28, 1958, at which time the season's monitoring test program was concluded.

During the 1958 test period these marine automatic weather stations were monitored by six shore stations along the Gulf of Mexico. The stations were also monitored at the National Bureau of Standards, Washington, D.C., and during the night signals from these stations were heard in the states of Maine and Washington. The Federal Communications Commission operated two monitoring stations, the Navy operated one station, the Texas Agricultural and Mechanical College operated one station, and the U. S. Weather Bureau operated two stations. (WBO Burrwood and WBAS Brownsville) Although the evaluation of the monitored data has not been completed, it is estimated that more than 75 percent of the required technical information has been obtained from the overall monitoring program.

It might be well at this point to note the advances made in the marine automatic weather station equipment as revealed by tests made in 1956 and 1958. The most notable of these may be found in communications, design, and the length of sustained periods of operation. The range of transmission of the 1956 tests was between 150 to 300 miles as compared with 600 mile day-time range and over 1000 mile night-time range of the boat station. Comparatively little shore-station monitoring of the 1956 stations was possible, while in the 1958 monitoring program the Federal Communications Commission, whose stations maintain continuous listening watch, received 100 percent of all data transmitted by the stations.

WBO Burrwood, where the receiving and recording equipment was activated by an automatic timeclock, received about 90 percent of all transmissions.

As a result of these tests, it is considered that the operational use of the marine automatic weather station should be a reality in the very near future.

Many other uses for such stations in the gathering of meteorological data appear to be technologically feasible. It might be possible to automatically launch radiosondes or rocketsondes at preset intervals from such a sta-

tion. Data collection from satellites with automatic relay to land stations might also be possible. In summary, we hope that stations of the type reported on here can be the forerunner of an automatic weather collection network covering the oceans of the world.

Air Travel—Stopovers for Personal Reasons

ALL employees purchasing plane tickets for travel on official business should consider prior to requesting a stopover for personal reasons enroute to or from the official point to be visited that the airlines now base their charge on the separate one way fares involved, which results in a higher cost. Such additional cost is payable by the employee. For example, the fare from Fort Worth to Washington is $82.25. However, although Nashville, Tennessee is on a direct route, a stopover at that point will increase the cost of the ticket to $84.30. The additional $2.05 plus tax must be paid in cash to the ticket agent at the time the Transportation Request is surrendered to the carrier for transportation. The stopover point should not appear on the Transportation Request.

Employee Suggestion

ADDITIONAL protection may be provided to the gear train and dial mechanism of the anemometer type F104 (old designation S) by covering the part of the anemometer containing the dial with a canvas skirt. The skirt should be securely taped or tied, above and below the dial. The additional protection may be desirable during periods of severe weather or where there is a high level of airborne particles. The use of the skirt is optional with each station. The skirts will not be an item of supply.

This method of protection was suggested by Mr. Irving Zellon, WBAS Atlantic City, New Jersey.

National Science Foundation and WB Undertake Joint Research Projects

THE National Science Foundation recently announced support for two research proposals submitted by Weather Bureau project leaders. Established by law in 1950 for the express purpose of fostering the basic sciences and skills, the 85th Congress in 1958 specifically authorized and directed the NSF to initiate a program of research on atmospheric problems with special reference to weather modification. In view of the current status of the subject, the research will necessarily cover a wide range of basic atmospheric studies, and experimental programs, some of an unconventional nature.

The two Weather Bureau proposals were submitted by Dr. Gilbert D. Kinzer, Director of the Physical Science Laboratory, and Mr. Dwight B. Kline, Office of Meteorological Research. By title they were respectively "Measurements of the Positive and Negative Conductivities of the Air, Rate of Ionization, and Electric Field Intensity," and "Synoptic Observations and Studies of Freezing Nuclei Anomalies." Excerpts from summaries of the two proposals follow:

"The electrical properties of the lower atmosphere are recognized as factors of importance in evaluating atmospheric pollution. Past records of Israel, Holzer, Carnegie Institute, and the Tucson Magnetic Observatory have shown that electrical parameters over continents reflect local as well as global atmospheric characteristics and that there has been a secular decrease in the value of the mean conductivity brought about by the increase of air pollution. It is proposed that measurements be made of the positive and negative conductivities of the air, the electric field intensity, and the rate of ionization at the Geophysical Observatory of the Weather Bureau on Mauna Loa in the Hawaiian Islands. This site appears ideal for a benchmark measurement of these parameters. It is isolated from local sources of industrial, agricultural and nuclear pollution. Measurements of the type proposed could be duplicated later in detail and trends in atmospheric condition can be quantitatively established."

"There is increasing evidence, subject to a number of qualifications, that detectable fluctuations in the number of natural freezing nuclei, or their activity, or both may somehow be related to large scale factors of potential geophysical and meteorological concern. Available data are extremely limited and of uncertain quality, and are seriously deficient both in continuity and geographical coverage. Nevertheless, the implications of the clues to date appear to be of such importance to the field of meteorology that an expanded research and observational program in this field is warranted."

Some additional background information on the latter project was supplied in the April 1959 issue of TOPICS. Both projects will begin as soon as equipment becomes available and arrangements for the necessary supporting facilities and manpower completed. In both instances, the investigations have been developed as cooperative efforts with the National Science Foundation. Funds made available will provide considerably more flexibility and continuity in the investigations than would otherwise be possible under current budgetary restrictions.

Antarctic Recruitment

APPLICATIONS are now being accepted for Antarctic assignments in connection with the current Meteorological Program which is being conducted in cooperation with the National Science Foundation. Tentatively, the following staff is needed:

1 GS-13 $9890 Supervisory Meteorologist

3 GS-12 $8330 Supervisory Meteorologist

3 GS-11 $7270 Supervisory Meteorologist

5 GS-11 $7030 Electronic Technician

11 GS-9 $5985 Meteorological Technician

The positions are in the Excepted Service. Appointments will be for a period of 18 to 24 months including a rather extended period of training and indoctrination in the United States. Incumbents will serve approximately one year actually in the Antarctic. They will depart the United States in October or November of this year, and will return in November and December 1960.

In addition to the regular per annum salaries indicated above, an allowance approximating $2800 per year will be paid for the time spent in Antarctica in lieu of overtime and night differential. Also quarters, subsistence, and polar clothing are furnished free of charge.

Employees desiring consideration for one of these positions should apply by memorandum to the Central Office Personnel Management Division as soon as possible. Applications should be forwarded through appropriate supervisory offices and Regional Administrative Offices for comments and recommendations. Regional Administrative Offices are requested to forward personnel folders for recommended employees. Employees selected will be required to pass a thorough physical and psychiatric examination.

Helicopters Make Light Work of Hatteras Antenna Change

THE vital Cape Hatteras link in the Weather Bureau's chain of Atlantic weather radar installations has been strengthened through the joint efforts of Weather Bureau radar technicians and a pair of U. S. Marine Corps helicopters.

The weather search radar at Cape Hatteras, N. C., had been in continuous operation for nearly four years. It was deemed advisable to remove the much used equipment and replace it with improved, newer components. The old antenna was scheduled to come down and the replacement installed to insure peak efficiency throughout the approaching hurricane season.

The job of dismounting and lowering over two tons of equipment from atop the spidery tower and of hoisting and installing a replacement was undertaken by Mr. William Fiocca, the Weather Bureau's area electronic technician.

At first it was thought best to make the exchange in the same manner the original installation had been made in 1956.

During that initial installation, no adequate facilities existed on Pamlico Sound to ferry to the Cape a crane large and powerful enough to raise the equipment more than 85 feet to the tower platform.

Mr. Charles Dannheiser of the Weather Bureau's Operations and Station Facilities Division, supervising the original installation, built an A-frame hoist above a hole cut into the steel platform atop the tower. The antenna equipment was drawn up through the hole, suspended above the platform while the hole was welded closed, and then lowered to its moorings on the platform.

This year, however, such an operation was deemed impractical owing to the necessity of rigging the A-frame and conducting the entire operation inside the huge radome now covering the antenna.

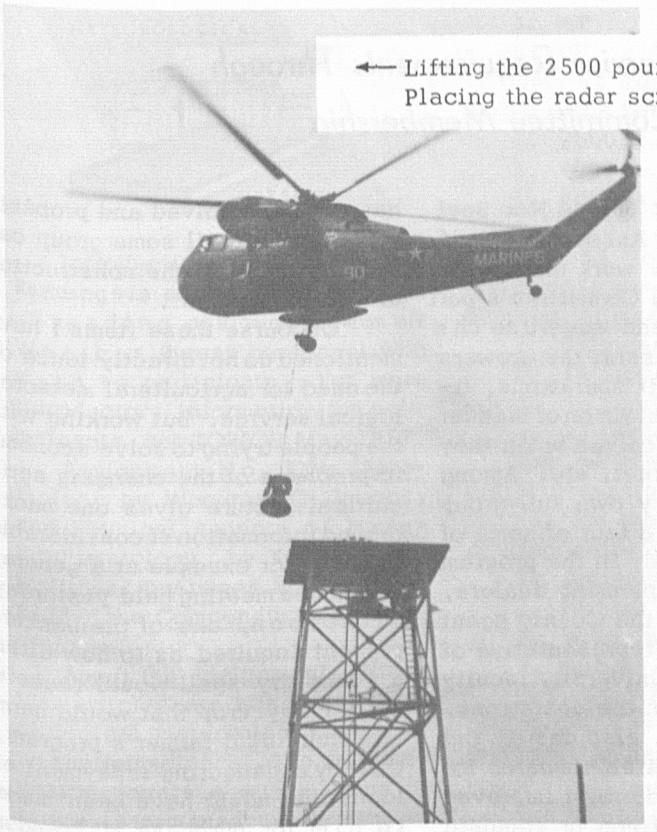
Thoughts of the mythical "sky hook" must have been running through Bill Fiocca's mind when he conceived the idea of using helicopters. He placed a call to Colonel K. B. McCutcheon, Commanding Officer of Marine Air Group 26 based at Camp Lejeune near Jacksonville, N. C., about 15 miles from Hatteras. Col. McCutcheon heard Bill Fiocca's problem and was enthusiastic about his idea for a solution.

Soon a big HR2S-1 type helicopter and a smaller HRS type from Marine Helicopter Transport Squadron 461 were dispatched to the Hatteras site.

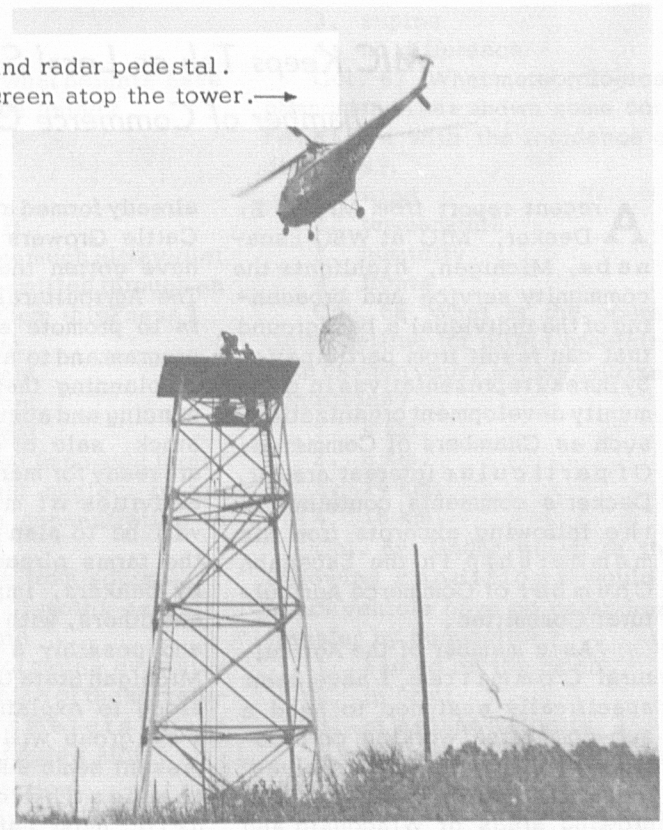
The operation began shortly after breakfast on April 16. By lunch time the job was done. In two and one-half hours the two helicopters removed the radome, antenna, and pedestal from the platform, raised the necessary replacement apparatus, and reinstalled the protective dome.

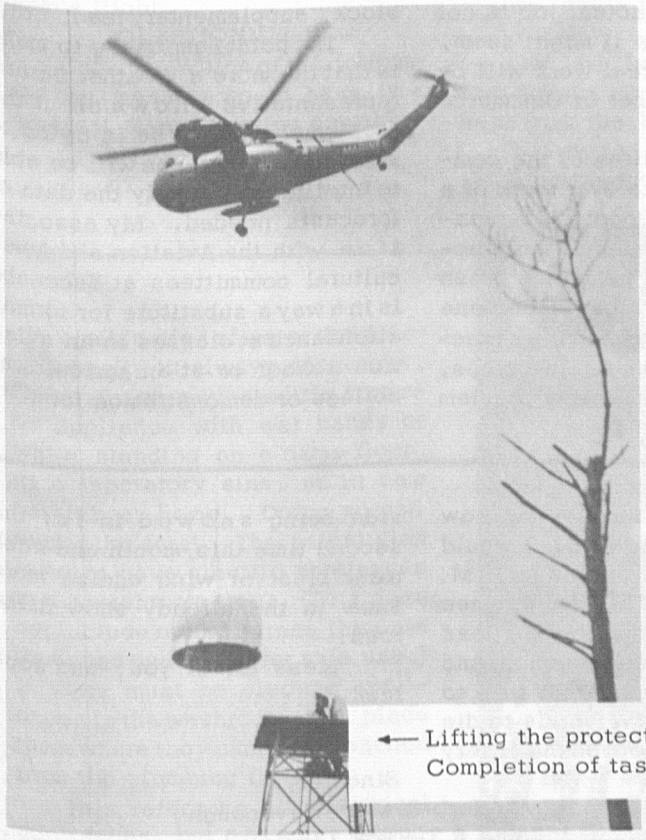
This marked the first time the Weather Bureau applied "Sky Hook" techniques to this form of maintenance problem. Congratulations have been sent to all concerned for the speedy completion of an important job that insures full radar protection against any tropical storms that pass near Cape Hatteras this summer.

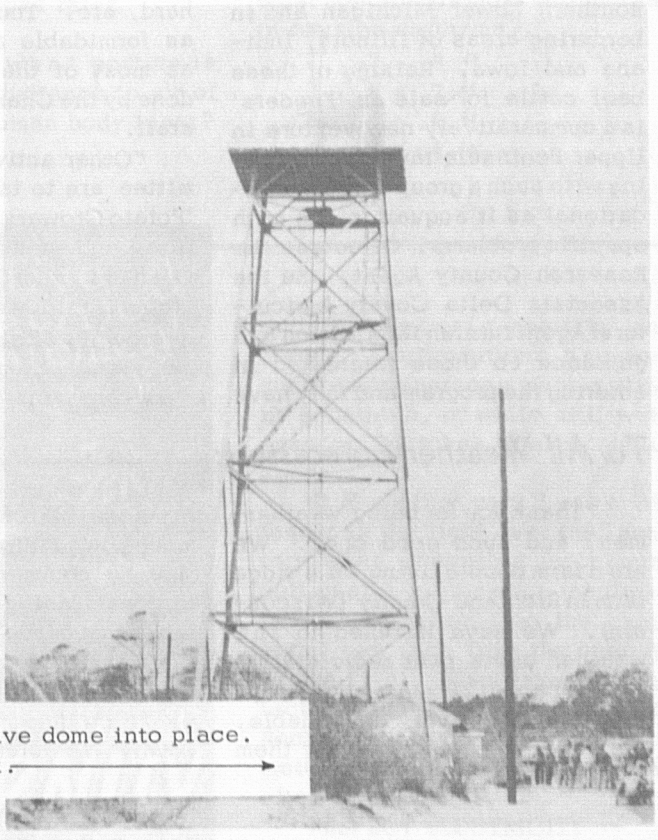
(See pictures next page.)



← Lifting the 2500 pound radar pedestal.
Placing the radar screen atop the tower. →







← Lifting the protective dome into place.
Completion of task. →

MIC Keeps Tab on Local Service Requirements Through Chamber of Commerce Committee Membership

A recent report from Mr. S. E. Decker, MIC at WBO Escanaba, Michigan, highlights the community service and broadening of the individual's background that can result from participation by Bureau representatives in community development organizations such as Chambers of Commerce. Of particular interest are Mr. Decker's comments contained in the following excerpts from his membership in the Escanaba Chamber of Commerce Agricultural Committee.

"As a member of the Agricultural Committee, I have been specifically assigned to head a sub-committee working on problems of raising 'Feeder Calves' for sale to feeders in surplus corn growing areas of Wisconsin and southern Lower Michigan and in bordering areas of Illinois, Indiana and Iowa. Raising of these beef cattle for sale as 'Feeders' is a comparatively new venture in Upper Peninsula farming. Working with such a group is very educational as it acquaints one with specific problems. Of course the Research County Agent, and the Associate Delta County Agricultural Agent furnish information and guidance to those interested in entering the program and they have already formed a 'Bay de Noc Beef Cattle Growers Association' and have gotten the work underway. The Agricultural Committee's part is to promote and advertise the program and to assist the growers in planning their operations, financing and acquisition of breeder stock, sale of calves when they are ready for market, etc. Among activities of my own sub-group will be to plan a tour of some of the farms already in the program by bankers, implement dealers, and others, with the County Agent and possibly a representative of Michigan State University faculty along to explain the operations. The group will also design and present some suitable awards for the best herd, most improved herd, most uniform or standard herd, etc. The actual job is not as formidable as it might seem, as most of the real work will be done by the Chamber of Commerce staff.

"Other activities of the committee are to take over work of a 'Potato Growers Booster Association,' and sponsoring of introduction of other new crops (cash crops). Pilot work has been done in growing of strawberries, broccoli and other vegetable crops. However the marketing problem has not been solved and probably will not be until some group can be interested in the construction of a freezing plant.

"Of course these items I have mentioned do not directly touch on the need for agricultural meteorological service. But working with the people trying to solve economic problems of the changing agricultural picture gives one background information of considerable value. For example at a general committee meeting held yesterday afternoon, one of the bankers present inquired as to how often a long dry spell would cause a short hay crop that would harm the individual farmer's program, thereby endangering repayment of loans that might have been made to him for purchase of breeder stock, supplementary feed, etc.

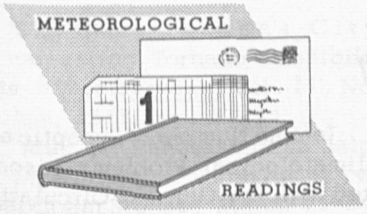
"The point I am trying to make is that the more a Weather Bureau representative knows about the problems of those he is trying to service, the better he will be able to intelligently supply the data or forecasts needed. My association with the Aviation and Agricultural committees at Escanaba is in a way a substitute for formal attendance at classes in an aviation school or at an agricultural college or demonstration farm."

To All Weather Forecasters:

"Thank you for being weathermen, and such good ones. We are a farm couple living on a ridge farm in Richland County (Wisconsin). We have listened to the weather casts over radio station WHA for about 20 years and always found them to be very dependable. We have been truly glad for them in these March storms and how much you go into details. I would like to comment on the 6 P.M. forecast March 15. Vic Kinunen I believe made that one. Bless you for being so thorough and telling us at about what time to expect those NW winds to die down. We were both on the jittery side being snowed in for the second time this month and each new blast of wind adding more snow to the already snow filled road.

"Bless all of you, and good luck."

Sincerely
/s/Herb & Mary Cavanaugh
Route # 3 - Box 246
Richland Center, Wisconsin



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXV: Aerobiology by Woodrow C. Jacobs, and Physical Aspects of Human Bioclimatology, by Konrad J. K. Buettner, on pages 1103 through 1123 of the Compendium of Meteorology.

About the Assignment: These two articles are concerned with biological meteorology which is an applied science. The information covers a wide range of interests from insect collecting to space flight.

QUESTIONNAIRE

Col. 61 Which of the following air masses would have the greatest spore carrying power?

1. mT
2. cT
3. mP
4. cP

Col. 62 To what heights have spider webs been found?

1. 2000 ft.
2. 4000 ft.
3. 6000 ft.
4. 10,000 ft.

Col. 63 How much ultraviolet radiation is transmitted through an overcast of medium thickness?

1. 0 percent
2. 15 percent
3. 45 percent
4. 65 percent

Col. 64 What important factor did Wolfenbarger neglect in his formula for the concentration of codling moths?

1. distance from source
2. number of moths caught
3. wind data
4. number of moths available

Col. 65 Which of these meteorological parameters help in transporting particles aloft?

1. precipitation
2. humidity
3. steep lapse rates
4. dew

Col. 66 In what posture is the surface conductance to air of heat from the human body least?

1. sitting
2. standing
3. supine
4. no difference

Col. 67 What meteorological phenomenon has shown some correlation with the incidence of diseases?

1. wind
2. temperature
3. humidity
4. fronts

Col. 68 What is the operational ceiling for pilots breathing pure oxygen under nonpressurized conditions?

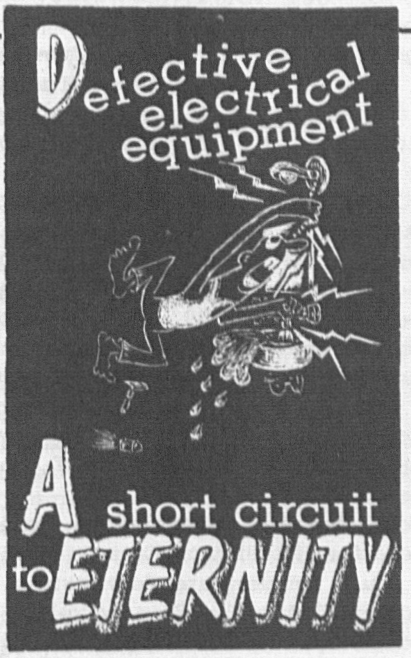
1. 4 km.
2. 6 km.
3. 14 km.
4. 18 km.

Col. 69 Under which of the following conditions would a space vehicle have no cabin heat transfer by convection?

1. parked on the moon
2. in orbit
3. at escape velocity
4. beyond the earth's gravitational field

Col. 70 Which part of the solar spectrum is most influencial in causing erythema?

1. .7 - .8 μ
2. .6 - .7 μ
3. .4 - .6 μ
4. .3 - 4 μ



A combination of water and electricity is always dangerous. Never touch any electric fixture or appliance with wet hands or while standing on a damp floor, at a laboratory sink, or in the bathtub at home. Doing so can easily be fatal. The safest plan is not to have electric appliances in the washroom area. (This does not include razors, since they are designed and tested for safe use.) If there must be electric appliances in the washroom area, place them where they cannot be reached from the plumbing fixtures.

This refers to all electrical appliances, but chiefly among these offenders are portable radios, electric heaters, and dryers. Electrocutions are frequent among persons who, sitting in a bathtub, or while still wet, snap on switches to such appliances.

Still another very large offender is the light over the lavatory when controlled by a metal pull chain - unless an insulated link is installed into the chain about one inch from the opening of the shell. Simultaneous contact with brass portion of the light socket or the pull chain and a metal water faucet completes an often fatal circuit.

RESPECT ELECTRICITY -- DON'T SHORT CIRCUIT YOUR LIFE

Published Articles by WB Personnel

(Cont'd from last month, page 77)

D. C. House, "Air Mass Modification and Upper Level Divergence," Bulletin of the American Meteorological Society, vol. 39, No. 31, Mar. 1958, pp. 137-143.

C. L. Jordan, "Mean Soundings for the West Indies Area," Journal of Meteorology, vol. 15, No. 1, Feb. 1958, pp. 91-97.

W. H. Klein, "The Circulation and Weather of 1957," Weatherwise, vol. 11, No. 1, Feb. 1958, pp. 7-11, 32-34.

W. H. Klein, "The Frequency of Cyclones and Anticyclones in Relation to the Mean Circulation," Journal of Meteorology, vol. 15, No. 1, Feb. 1958, pp. 98-102.

W. H. Klein, "The Weather and Circulation of February 1957-A Month with an Expanded Circumpolar Vortex of Record Intensity," Monthly Weather Review, vol. 86, No. 2, Feb. 1958, pp. 60-70.

T. W. Kleinsasser and R. J. Younkin, "Application of the Heat Balance Approach to Maximum Temperature Forecasting," Monthly Weather Review, Vol. 86, No. 5, May 1958, pp. 165-170.

P. M. Kuhn with G. L. Darkow and V. E. Suomi, "A Mesoscale Investigation of Pre-Tornado Thermal Environments," Bulletin of the American Meteorological Society, vol. 39, No. 4, Apr. 1958, pp. 224-228.

P. M. Kuhn with V. E. Suomi, "An Economical Net Radiometer," Tellus, vol. 10, No. 1, Feb. 1958, pp. 160-163.

H. Landsberg, Book review of Lehrbuch der Klimatologie by Alissow, Drosdow, and Rubinstein, Bulletin of the American Meteorological Society, vol. 38, No. 8, Oct. 1957, pp. 498-500.

H. E. Landsberg, Book review of "Das Stadtklima" by Albert Kratzer, Bulletin of the American Meteorological Society, vol. 38, No. 8, Oct. 1957, p. 500.

J. T. Lee and J. G. Galway, "The Jet Chart," Bulletin of the American Meteorological Society, vol. 39, No. 4, Apr. 1958, pp. 217-223.

R. J. List, "The Concentration of Nuclear Debris in the Air as a Meteorological Variable," Bulletin of the American Meteorological Society, vol. 39, No. 5, May 1958, pp. 276-278.

L. Machta, R. J. List, and L. F. Hubert, "World-Wide Travel of Atomic Debris," Science, vol. 124, No. 3220, Sept. 14, 1956, pp. 474-477.

Bernard W. Magor, "A Meso-Low Associated with a Severe Storm," Monthly Weather Review, vol. 86, No. 3, Mar. 1958, pp. 81-90.

Robert H. Martin and Andrew Bucci, "A Comparison of Two Redeveloping Texas Lows, January 1958," Monthly Weather Review, vol. 86, No. 1, Jan. 1958, pp. 29-40.

R. A. McCormick, "An Estimate of the Minimum Possible Surface Temperature at the South Pole," Monthly Weather Review, vol. 86, No. 1, Jan. 1958, pp. 1-5.

Banner I. Miller, "On the Maximum Intensity of Hurricanes," Journal of Meteorology, vol. 15, No. 2, Apr. 1958, pp. 184-195.

J. Murray Mitchell, "Effect of Changing Observation Time on Mean Temperature," Bulletin of the American Meteorological Society, vol. 39, No. 2, Feb. 1958, pp. 83-89.

Paul L. Moore and Staff WBO Miami, "The Hurricane Season of 1957," Monthly Weather Review, vol. 85, No. 12, Dec. 1957, pp. 401-408.

Vance A. Myers, "The Application of Radiation Data to Maximum Temperature Forecasting," Monthly Weather Review, vol. 86, No. 5, May 1958, pp. 149-164.

Jerome Namias, "Synoptic and Climatological Problems Associated with the General Circulation of the Arctic," Transactions of the American Geophysical Union, vol. 39, No. 1, Feb. 1958, pp. 40-51.

James F. O'Connor, "The Weather and Circulation of January 1958 - Low Index with Record Cold in Southeastern United States," Monthly Weather Review, vol. 86, No. 1, Jan. 1958, pp. 11-18.

Wayne C. Palmer, "Drought in 1957," Weatherwise, vol. 11, No. 1, Feb. 1958, pp. 22-25, 36.

Wayne C. Palmer and A. Vaughn Havens, "A Graphical Technique for Determining Evapotranspiration by the Thornthwaite Method," Monthly Weather Review, vol. 86, No. 4, Apr. 1958, pp. 123-128.

L. T. Pierce, "Estimating Seasonal and Short-Term Fluctuations in Evapotranspiration from Meadow Crops," Bulletin of the American Meteorological Society, vol. 39, No. 2, Feb. 1958, pp. 73-78.

Arthur N. Pore, "Ocean Surface Waves Produced by Hurricanes," Monthly Weather Review, vol. 85, No. 12, Dec. 1957, pp. 385-392.

F. W. Reichelderfer, "Upper-Air Programme on Transient Ships," WMO Bulletin, vol. 6, No. 3, July 1957, pp. 109-110.

John A. Riley, Jr., "Soil Temperatures as Related to Corn Yield in Central Iowa," Monthly Weather Review, vol. 85, No. 12, Dec. 1957, pp. 393-400.

Morton J. Rubin, "An Occurrence of Steam Fog in Antarctica," Weather, vol. XIII, No. 7, July 1958, pp. 235-238.

Morton J. Rubin, "Synoptic Meteorology and the IGY," pp. 154-160 of "Geophysics and the IGY," Geophysical Monograph No. 2, American Geophysical Union, Washington, D. C., July 1958.

Alexander Sadowski and Staff

of SELS Center, Kansas City, "Forecasting Tornado Possibilities," Weatherwise, vol. 11, No. 2, Apr. 1958, pp. 51-54.

Alan N. Sanderson and Ralph B. Mason, Jr., "Behavior of Two East Coast Storms, March 13-24, 1958," Monthly Weather Review, vol. 86, No. 3, Mar. 1958, pp. 109-115.

J. M. Sassman and R. A. Allen, "Forecasting Precipitation Occurrence from Prognostic Charts of Vertical Velocity," Monthly Weather Review, vol. 86, No. 3, Mar. 1958, pp. 95-99.

Mark J. Schroeder, "Fire-Weather Survey Can Aid Prescribed Burning," California Forest and Range Experiment Station, Technical Paper No. 21, Berkeley, Nov. 1957.

Robert F. Shaw and Ellis J. Joseph, "Rapid Cyclogenesis over the Great Basin, April 22-23, 1958," Monthly Weather Review, vol. 86, No. 4, Apr. 1958, pp. 141-146.

H. J. Shellum and Gordon C. Tait, "A Classic Example of Rapid Cyclogenesis in the Midwest, February 25-28, 1958," Monthly Weather Review, vol. 86, No. 2, Feb. 1958, pp. 71-79.

F. G. Shuman, "Numerical Methods: I. The Balance Equation," Monthly Weather Review, vol. 85, No. 10, Oct. 1957, pp. 329-332.

F. G. Shuman, "Numerical Methods: II. Smoothing and Filtering," Monthly Weather Review, vol. 85, No. 11, Nov. 1957, pp. 357-361.

Paul Stark, "The Weather and Circulation of April 1958," Monthly Weather Review, vol. 86, No. 4, Apr. 1958, pp. 132-140.

Nina A. Stepanova, "On the Lowest Temperatures on Earth," Monthly Weather Review, vol. 86, No. 1, Jan. 1958, pp. 6-10.

S. Teweles and F. G. Finger, "An Abrupt Change in Stratospheric Circulation Beginning in Mid-January 1958," Monthly Weather Review, vol. 86, No. 1,
(Cont'd on page 92, Col. 3)

Superior Accomplishment Awards

Bernice Abbott	Management Analyst	Central Office
Fermin Aragon	Meteorological Aid	Albuquerque
Louis Billones	Meteorologist	WRPC San Francisco
James Bradley	Meteorological Tech.	Las Vegas
Jean Brown	Meteorologist	San Francisco
Ivan Brunk	Meteorologist	Chicago
Mary Bryant	Card Punch Operator	WRPC San Francisco
Evelyn Cain	Clerk-Stenographer	RFC Hartford
Karl Chambers	Meteorologist	Las Vegas
Willis Chambliss	Laborer-Janitor	WNAP
Lars Christensen	Meteorologist	Springfield
Gatch Cohoe	Mechanic	St. Paul Island
Jewell Cook	Card Punch Supervisor	WRPC San Francisco
Martha Cournoyer	Personnel Technician	Central Office
Charles Cunniff	Meteorological Aid	Milton, Mass.
Margaret Daly	Clerk-Stenographer	Philadelphia
Mr. & Mrs. Milton Drew	Observers	Newport, Vermont
Robert Foster	Meteorologist	Toledo
Robert Frye	Project Planner	NWRC Asheville
James Georg	Meteorologist	Lakeland
Charles Green	Meteorological Tech.	PWP Seattle
Dale Hackett	Hydrologist	RFC Hartford
Helen Hamilton	Personnel Clerk	RAO Ft. Worth
Charles Hanas	Executive Officer	Resolute
Garland Hill	Asst. Crew Leader	Central Office
GROUP AWARD:		Hilo
Howard Tatum	Meteorological Aid	
Raymond Busniewski	Meteorological Tech.	
William Higgins	Meteorological Aid	
George Nii	Meteorological Aid	
Roy Sodetani	Meteorological Aid	
Takaharu Mizukami	Meteorological Aid	
Clyde Holmes	Meteorological Aid	WRPC San Francisco
Harry Hoose	Meteorologist	San Juan
GROUP AWARD:		
Bruce Hosmer	Electronic Technician	Honolulu, T. H.
Colby Foss	Electronic Technician	
Clyde Hughes	Position Classifier	Central Office
Robert Hullinger	Hydrologist	RFC Portland
Aubrey Hustead	Meteorologist	Norfolk, Va.
William Joern	Meteorologist	Moline
Everett Jones	Meteorological Tech.	Sioux Falls
Philip Kenworthy	Meteorologist	Minneapolis
Eugene Kilgore	Meteorologist	NY Internat'l. AP
GROUP AWARD:		King Salmon
Thomas Craig	Meteorological Tech.	
Donald Billman	Meteorological Aid	
George Foster	Meteorological Aid	
Woodrow Mossman	Meteorological Aid	
Dan Nelson	Meteorological Aid	
Alex Kish	Meteorologist	Jackson
Benjamin Kolker	Meteorologist	Buffalo

Arthur Krueger	Meteorologist	Central Office
Luke Kunkel	Meteorologist	Norfolk, Neb.
Harold Lami	Meteorologist	Mobile
Glenn Lee	Meteorologist	Pendleton
Harold Lippmann	Meteorologist	Central Office
Nancy Livingston	Secretary	Central Office
Albert Margrett	Meteorological Aid	NWRC Asheville
Aran Markarian	Teleg.-Typew. Super.	San Francisco
Iler Martello	Secretary	Central Office
Rufus Maynor	Tab. Machine Operator	NWRC Asheville
Robert McBride	Clerk	WRPC Chattanooga
John McCallister	Hydrologist	RFC Kansas City
James McCloy	Meteorologist	RAO New York
Clifford McGregor	Meteorologist	New York
William McMurray	Meteorologist	NWRC Asheville
Edward Montani	Meteorological Aid	San Francisco
Lucille Morris	Meteorological Aid	Honolulu
Charlotte Ormsbee	Employee Rel. Asst.	Central Office
Robert Orton	Meteorologist	Amarillo
Samuel Parrish	Meteorologist	Charleston
Harold Paukert	Meteorologist	RAO Ft. Worth
Ellis Pike	Meteorologist	Wichita
Miree Post	Meteorological Aid	West Palm Beach
JoAnn Poyner	Appointment Clerk	RAO Ft. Worth
Eugene Rasmusson	Hydrologist	RFC St. Louis
John Raver	Meteorologist	Central Office
Charles Reynolds	Meteorological Aid	Central Office
Evelyn Rice	Personnel Officer	RAO New York
Vaughn Rockney	Meteorologist	Central Office
Walter Roquemore	Administrative Officer	RAO Ft. Worth
Evelyn Rowe	Fiscal Clerk	RAO Ft. Worth
John Schilling	Meteorologist	Knoxville
Mark Schroeder	Meteorologist	Berkeley
Gerald Shak	Meteorologist	NY Internat'l AP
John Shelton	Meteorological Aid	NWRC Asheville
Raymond Smith	Meteorological Aid	NWRC Asheville
Josephine Snyder	Secretary	Central Office
Joseph Strub	Meteorologist	Minneapolis
Beulah Taylor	Tab. Mach. Operator	NWRC Asheville
Eugene Thompson	Meteorologist	Port Arthur
Frank Thrasher	Meteorological Aid	AWP Boston
Elizabeth Weiss	Publications Editor	Central Office
Eugene Peck	Hydrologist	Salt Lake City
Lloyd Seidel	Substation Inspector	Columbus, Ohio
Lorne Baily	Meteorological Aid	King Salmon
Allane Wilson	Meteorological Aid	Montgomery
Donald Harrison	Meteorological Aid	Anchorage
Charles Patterson	Meteorologist	Bakersfield
Oliver Newton	Meteorologist	Brownsville
Daniel Monte	Meteorological Aid	NY Internat'l AP
Ina Sears	Meteorological Aid	NAWAC
Palmer Reynolds	Meteorologist	Amarillo
Clement Richard	Meteorologist	Lake Charles
Frankie Rice	Fiscal Clerk	RAO Ft. Worth
Beatrice Durkin	Clerk-Typist	NAWAC
Ila Smith	Fiscal Clerk	RAO Ft. Worth
William Glenn	Meteorological Aid	WRPC Chattanooga
Larry Mayne	Meteorologist	Amarillo

(Cont'd from page 91, col. 1)

Jan. 1958, pp. 23-28.

H.C.S. Thom, "A Note on the Gamma Distribution," Monthly Weather Review, vol. 86, No. 4, Apr. 1958, pp. 117-122.

Joseph Vederman and Robert B. Ross, "Northern Hemisphere Normal 1000-mb. Chart," Bulletin of the American Meteorological Society, vol. 39, No. 1, Jan. 1958, pp. 28-31.

L.L. Weiss and W.T. Wilson, "Precipitation Gage Shields," Comptes Rendus et Rapports - Assemblee Generale de Toronto 1957 (UGGI) Tome I, Gentbrugge, 1958, pp. 462-484.

L.L. Weiss and W.T. Wilson, "Snow-Melt Degree-Day Ratios Determined from Snow-Lab Data," Transactions of the American Geophysical Union, vol. 39, No. 4, Aug. 1958.

H. Wexler, "Antarctic Research During the International Geophysical Year," pp. 7-12 of "Antarctica in the International Geophysical Year," Geophysical Monograph No. 1, American Geophysical Union, Washington, D. C., 1956.

H. Wexler, "Antarctic Research - International Geophysical Year," Geophysica, vol. XXI, No. 3, July 1956, pp. 681-690.

H. Wexler, "Meteorology in the International Geophysical Year," The Scientific Monthly, vol. 84, No. 3, Mar. 1957, pp. 141-145.

H. Wexler, "The Satellite and Meteorology," Journal of Astronautics, vol. 4, Spring 1957, pp. 1-5.

H. Wexler, "Some Aspects of Antarctic Geophysics," Tellus, vol. 10, No. 1, Feb. 1958, pp. 76-82.

H. Wexler and W. B. Moreland, "Winds and Temperatures in the Arctic Stratosphere," Polar Atmosphere Symposium Part I, Meteorology Section, Pergamon Press, 1958, pp. 71-84.

H. Wexler and M. Rubin, "Antarctic Climatology and Meteorology," pp. 36-43 in "Antarctica

in the International Geophysical Year," Geophysical Monograph No. 1, American Geophysical Union, Washington, D.C., 1956.

E. M. Wilkins, "Effective Coefficients of Diffusivity for Atomic Clouds at 1-2 Thousand Miles," Transactions of the American Geophysical Union, vol. 39, No. 1, Feb. 1958, pp. 58-59.

E. M. Wilkins, "A Note on Forecast Economics," Journal of Meteorology, vol. 15, No. 2, Apr. 58, pp. 237-240.

E. M. Wilkins, "Precipitation Scavenging from Atomic Bomb Clouds at Distances of 1000-2000 Miles," Transactions of the American Geophysical Union, vol. 39, No. 1, Feb. 1958, pp. 60-62.

Philip Williams, Jr. "An Objective Method of Forecasting Maximum Temperature at Salt Lake City, Utah," Bulletin of the American Meteorological Society, vol. 39, No. 4, Apr. 1958, pp. 202-204.

Charles M. Woffinden, "The Weather and Circulation of November 1957 - A Stormy Month with a Deep Trough over Central North America," Monthly Weather Review, vol. 85, No. 11, Nov. 1957, pp. 367-372.

Gordon W. Wylie, "Tropical Ice Storms - Winter Invades Hawaii," Weatherwise, vol. 11, No. 3, June 1958, pp. 84-87,90.

Assignment to Point Arguello, Calif.

NORMAN J. ASBRIDGE, Principal Assistant at Columbia, Missouri, has been selected for assignment in charge of the station to be opened at the Point Arguello Naval Missile Facility. He is 38 years of age, entered the Weather Bureau February 11, 1941, and his assignments have been at Billings, Gambell, Boston (Ocean Weather), Portland, Oregon, Pendleton, Annette Island, Nome, and Columbia, Missouri.

Inclusion of Date-Time in Local Forecasts

A suggestion that local forecasts transmitted on local weather teletypewriter loops include the time and day of issuance in the heading has met with favorable comment from field stations. A recent survey indicated that 86 percent of those who replied were in favor of the suggestion. An important part of the suggestion was that no line spaces be given between the heading and the text. The "no space" feature was emphasized as a method of preventing the date-time group from becoming separated from the text. Consequently the likelihood of an expired forecast being released by press and radio is reduced to a minimum.

As suggested, the forecast would take the form:

WASHINGTON AND VICINITY 5 PM FRIDAY

TEXT .....

Many stations already employ similar safeguards, but we believe others may find the suggestion of value in their releases.

Severe Local Storm Cooperators Meet

A "short-course" session was conducted at WBAS Columbia, Missouri in April to provide cooperating groups with a better understanding of their part in a severe local storm forecast and warning service. Those attending the meeting included representatives from the following groups in Columbia's area of county responsibility: civil defense, highway patrol, police, fire departments, schools, utilities, Red Cross, radio, television, and press.

The session included use of the tornado slides that have been furnished all offices and explanation of radar's use in storm detection. Weather Bureau procedures during a recent storm situation in the Columbia area were described in detail.

Length of Service Awards

40-Year Awards

Pensacola, Fla.
Cecil E. Mahaffey

35-Year Awards

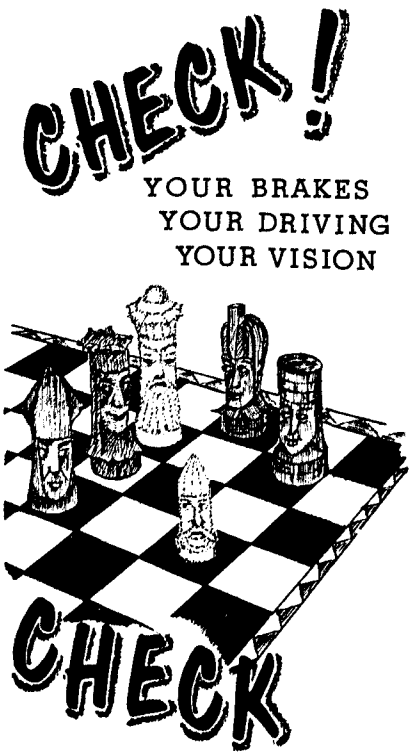
Chattanooga, Tenn. WRPC
Lloyd L. Knapp
Cleveland, Ohio WBAS
Harold N. Burke
El Paso, Tex.
Arthur W. Brooks
Jacksonville, Fla.
B. Harold Quattlebaum
Miami, Fla. WBO
Gordon E. Dunn
Salt Lake City, Utah RAO
Milton O. Swenson
Sandusky, Ohio WBO
Donald S. Post
San Francisco, Calif. WBAS
J. Harvey Morgan

15-Year Awards

Cincinnati, Ohio WBAS
Jackson P. Webb
Denver, Colo. WBAS
Gladys P. Shaw
Des Moines, Iowa WBAS
Warren C. Caldwell
Galveston, Texas WBAS
Charles D. Gouldie
Galveston, Texas WBO
James G. Taylor
Greensboro, N.C. WBAS
William Wells Brown
Houston, Tex. WBAS
Harold G. Baker
Idaho Falls, Idaho WBO
Harry R. Mansfield

Kansas City, Mo. RAO
Claudina M. Chenault
Kansas City, Mo. WRPC
Pauly L. Ball
Little Rock, Ark.
John C. Kennedy, Jr.
Los Angeles, Calif. WBAS
Gemo Yakubovsky
Miami, Fla. WBO
Allen M. Marshall
Minneapolis, Minn. WBO
Joseph H. Strub, Jr.
Missoula, Montana WBAS
Raymond Granger
Montgomery, Ala.
Warner E. Chapman
Nashville, Tenn.
Allen L. Marechale
New York, N.Y. RAO
Sylvia Shapiro
Salvatore Turano
New York, N.Y. WBAS
Joseph A. Mirisola
Arthur W. Wakeling
Pittsburgh, Pa. WBAS
Harry L. Wynn
Portland, Oregon WBAS
Harold S. Ayer
Marvin G. Kuykendall
Raleigh, N. C. WBAS
Donald E. Reynders
Roanoke, Va. WBAS
James E. Morgan
Rockford, Ill. WBAS
Paul E. Stry
Rome, Ga.
Juanita W. Lester
Salem, Oregon WBAS
Wendell M. Cook
Salt Lake City, Utah RAO
Tess Misrasi
Salt Lake City, Utah WBAS
Dorothy J. Nelson
San Francisco, Calif. WBAS
Frances B. Macklin
Robert H. Timeus
San Francisco, Calif. WRPC
Charley M. Stephens
San Francisco, Calif. PWP
Teddy Webb
Seattle-Tacoma Airport
John P. Burns
Sexton Summit, Oregon WBO
Vance P. Barich, Jr.
Williston, N. D. WBO
Ralph H. Colby
Youngstown, Ohio WBAS
Zelda J. Lincoln

Join the "Circle of Safety"



ACCIDENTS

DURING the month of May, many communities will be cooperating in the sixth annual National Vehicle Safety Check Program, sponsored by the Inter-Industry Highway Safety Committee and Look Magazine, with the cooperation of the Association of State and Provincial Safety Coordinators.

The program provides an opportunity for owners to have their vehicles safety checked (brakes, front lights, rear lights, steering, tires, exhaust system, glass, windshield wipers, rear view mirror, and horn) at community Safety-Check lanes, and in cooperating dealerships, garages, and service stations.

Nearly two out of every three registered vehicles are using our streets and highways with no official check made to determine safe driving conditions. The lives of millions of Americans depend on the chance that owners will maintain their vehicles in safe conditions.

Only 15 states and the District of Columbia require periodic motor vehicle inspection.

Periodic Safety-Checks are needed for all vehicles. Join the Circle of Safety - Check Your Car - Check Your Driving - Check Accidents.

RETIREMENTS

Frank J. Bavendick

FRANK J. BAVENDICK, who served as MIC at Bismarck for the past 20 years and headed the list of active employees in length of service, retired April 30, having completed more than 47 years in the Weather Bureau.

A native of Iowa, Mr. Bavendick joined the Bureau in 1910 in his home town of Dubuque, and early in his career he attained proficiency in river forecasting operations along the Mississippi. In addition to two tours of duty in Dubuque during the period 1910 to 1917, Frank served briefly at Charleston, South Carolina; Fort Wayne; Sioux City; Escanaba and Ludington, Michigan. He was a pioneer in the field of upper air meteorology. Arriving for duty at the kite station in Ellendale on a bitterly cold December day in 1917, he had to walk a mile across a pasture on the edge of town to reach the station. Three years later he transferred to Salt Lake City for an assignment in climatology, a field in which he has excelled for the past 39 years.

Bismarck was a town of 7000 population when Frank reported for assignment as Principal Assistant in 1922, and the station was considered a meteorological outpost in those days. The Weather Bureau office, located on Main Street, consisted of two buildings, one for the office and the other a residence. The grounds, 750' x 160', were a wonderful place for

the children, Mary Jane, Dolores, and Franklin, to romp.

Mr. Bavendick was promoted to MIC in 1939. In addition to discharging his responsibilities in the management of the station in a highly creditable manner, his labors in climatology have been most productive. In 1952 he published the excellent "Climate and Weather of North Dakota," in cooperation with the State Water Conservation Commission.

Mr. Bavendick has been active in civic and fraternal organizations and pursues many interesting hobbies, among them charcoal sketching, woodworking, short story writing, gardening, and fishing, to which he will be devoting considerable time after retirement. Mr. and Mrs. Bavendick plan to travel a great deal in the next few years but will maintain their home in Bismarck where friends may contact them at 723 Griffin Street.

Interviewed concerning his plans, Mr. Bavendick said, "Retiring from a job is not retiring from life. I'm not going to sit in a rocking chair. I have too much to do and besides, I prefer a hammock where I can see more of the sky."

Geneva J. Wolf

GENEVA J. WOLF, Clerk-Stenographer at Madison, retired on disability April 30 after more than 17 years of government service.

A native of Wisconsin, Miss Wolf graduated from Middleton, Wisconsin High School and was employed as a secretary in private industry before entering the Federal Service in 1941. She came to the Weather Bureau on October 10, 1955, by transfer from the Forest Service and served at the Weather Bureau Airport Station in Madison for more than three years before her retirement.

Miss Wolf's mailing address is 111 North Mills Street, Madison, Wisconsin.

Ross H. Harris

ROSS H. HARRIS, who was employed in the Procurement and Supply Section of the Central Office until his retirement March 31, 1959, (See April 1959 TOPICS), died April 23.

Mr. Harris is survived by his wife of 5001 North 17th Road, Arlington, Virginia, a daughter, a son, and two grandchildren.

Ivan R. Tannehill

IVAN R. TANNEHILL, Assistant Chief of Bureau for Operations when he retired in October 1954, died May 2 in Frederick, Maryland, at the age of 69. (See October 1951 TOPICS for a full account of his career.)

Mr. Tannehill entered the Weather Bureau in 1914 as an observer in Houston, after having worked as a newspaper reporter and a school teacher. World War I found him serving as a Weather Officer in the Signal Corps, and upon his return from military duty, he accepted assignment as Official in Charge at Galveston. In 1929 he transferred to Washington as Assistant Chief of the Forecast Division and later served as Chief of the Marine Division, Chief of the SR&F Division, and Assistant Chief of Bureau for Operations. Always a faithful adviser and a distinguished public servant, Mr. Tannehill contributed much to the Bureau, not only in technical accomplishment but in good humor and comradeship as well. Author of five well-known books, his latest, The Hurricane Hunters, came off the press in 1955. His first book, Hurricanes, Their Nature and History, was followed by Weather Around the World, Drought, Its Causes and Effects, and All About the Weather, the latter a book for youngsters nine to twelve.

Mr. Tannehill is survived by his wife who lives at 414 Biggs Avenue in Frederick, a daughter, three grandchildren, two brothers, and a sister.

William J. Thompson

WILLIAM J. THOMPSON, Rawinsonde Specialist, WBAS San Juan, died March 30 following a brief illness.

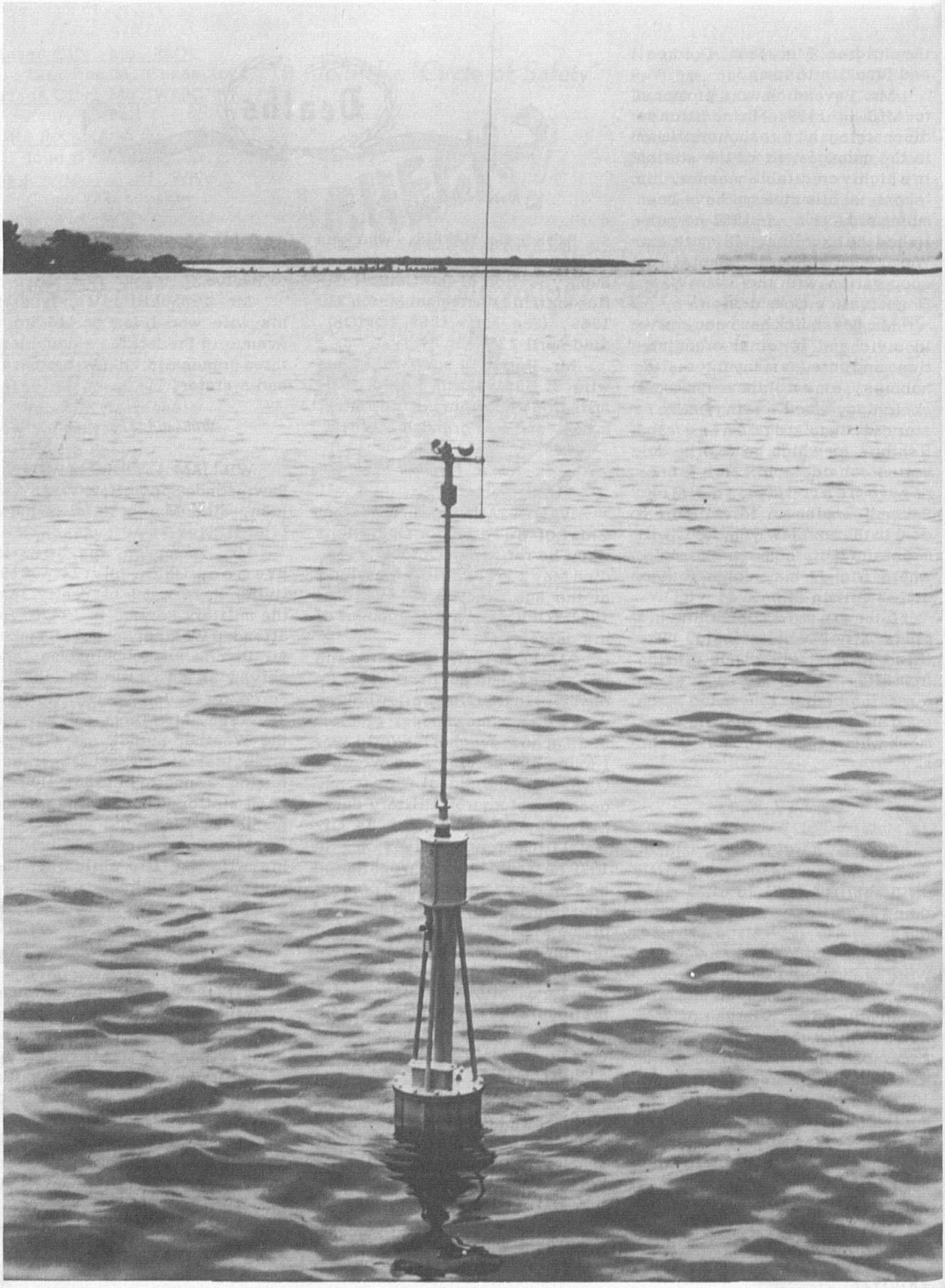
Mr. Thompson was born in Bremen, Ohio, July 24, 1919, living there until his entry into the military service in 1947. He attended Weather School at Tinker Air Force Base, Oklahoma, and served as an observer in the Air Force for seven years. On June 26, 1955, Mr. Thompson entered the Weather Bureau as a meteorological aid at Yakutat, transferring to Annette in 1956. He has been stationed at San Juan since August 2, 1957.

Mr. Thompson is survived by his wife and two children. The present home address is Route 1, Box 21-B, West Palm Beach, Fla.

Vincent J. Tomardy

VINCENT J. TOMARDY, former Training Officer at the National Weather Analysis Center, died April 27. Mr. Tomardy retired on disability January 26, 1959, after more than 14 years of government service. An article on his retirement was published in March 1959 TOPICS.

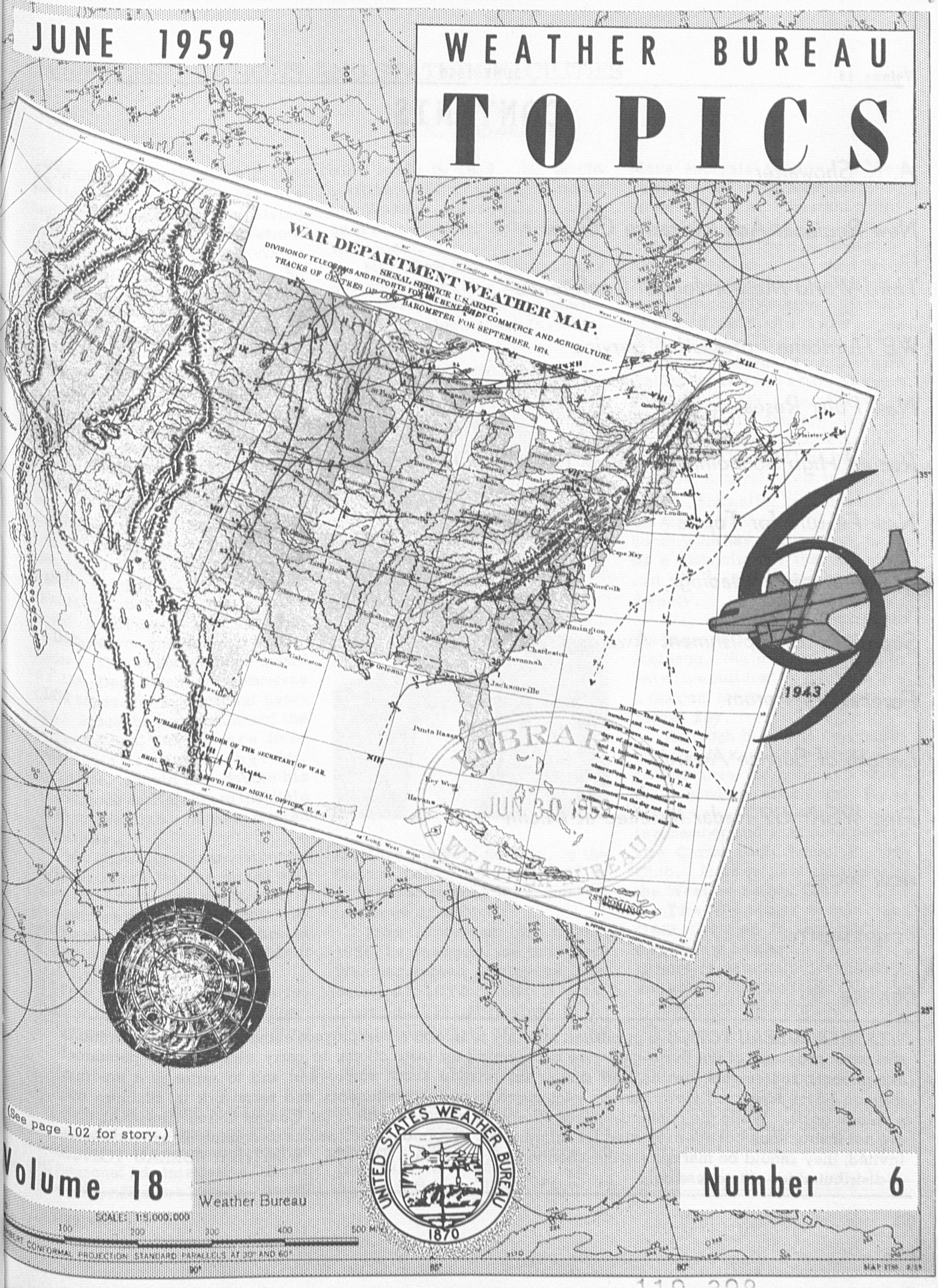
Mr. Tomardy is survived by his wife and one son, Bernard, who live at 601 64th Avenue, N.E., Washington 27, D. C.



Automatic Marine Weather Station Model 3

JUNE 1959

WEATHER BUREAU TOPICS



(See page 102 for story.)

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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.

CHIEF, OBSERVATIONS AND STATION FACILITIES

A. K. Showalter

SINCE October 1958, field stations and regional offices have become accustomed to receiving correspondence from Observations and Station Facilities Division over the signature of A. K. Showalter. As Chief of O&SF, Al Showalter is responsible for the planning and implementation of the Bureau's basic observational program and supporting facilities at some 300 first-order stations, 700 second-order stations, and 12,000 substations.

Mr. Showalter brings to this new assignment a wealth of experience gained in almost 30 years service in many of the Bureau's programs. He is perhaps best known for his work in the forecasting field and particularly, for his development of the "Showalter Stability Index" which permits quick evaluation of potential thunderstorm and tornado conditions. This resulted in an award of the Department of Commerce Gold Medal for Exceptional Service. Since the end products of the observational program are forecasts, it is fitting that Mr. Showalter should now devote his experience and talents to the field of observations and their related facilities.

Mr. Showalter is a transplanted midwestener. He was raised on a farm in Iowa and nostalgically remembers travelling to school by horse and buggy. Now he directs O&SF's programs on behalf of jet travel!

He attended Loras College, Dubuque, Iowa, on a 4-year meritorious scholarship, graduating cum laude in 1928. He taught Latin for a while, and then entered the Weather Bureau July 1, 1929 as Junior Observer at La Crosse, Wisconsin.

Mr. Showalter has had many assignments since then. There were assignments in the Marine Division, Instrument Division,

Air Mass Analysis Section, in the Central Office. Then in 1935 he transferred to Boston as observer in charge of APOBS.

From September 1935 to June 1936, he was one of the first three Weather Bureau employees to be detailed to MIT for graduate work. Later in 1936, Al returned to the Central Office to work in the Air Mass Analysis Section. In December 1937 to November 1945, he was, first, an assistant meteorologist and, later, Meteorologist in charge of the Hydrometeorological Section of the then River and Flood Division, now Hydrologic Services Division. Between 1945 and 1952, he served as Meteorologist in Charge at Los Angeles, in charge of the Southern California and Arizona District Forecast Center. He returned to Washington in January 1953 for his third Central Office assignment, as Chief of the National Weather Analysis Center.

Mr. Showalter is a member of the American Meteorological Society (he has served two terms as a Councilor of the Society), and of the Royal Meteorological Society.

Mr. Showalter is married to the former Martha Bond Hawes of Atkinson, North Carolina. They have five children, A. Kenneth, Jr., J. Gordon, Martha Lisa, Robert L., Teresa Kay.

Although his active professional life keeps him very busy, he has time for hobbies: baseball, bowling, literature. He is also active in Cub Scout work and is a member and past president of the Carrol High School Fathers Club. Al is a past president of the Weather Bureau Club.

The Weather Bureau, and O&SF Division in particular, is fortunate in having Mr. Showalter's extensive meteorological interest and ability now focussed upon the fundamental observational program.

New Regional Administrative Officer

LLOYD E. BROTZMAN, formerly Assistant Chief for Program Planning, has assumed the duties of Regional Administrative Officer, Region I, effective June 1. "Brotz" brings to this new assignment a wealth of experience which will prove invaluable in meeting the increasing demands being placed on the regions. (For a resume of Mr. Brotzman's Weather Bureau assignments see October 1956 TOPICS.)

Third World Meteorological Conference

THE U. S. Delegation to the Third World Meteorological Congress, with Dr. Reichelderfer as principal Delegate, recently returned to Washington after attending the four-week session during April in Geneva, Switzerland. Other Weather Bureau members of the Delegation were Messrs. W. E. Hiatt, A. W. Johnson, A. H. Nagle, and G.D. Hughes. Also on the Delegation were Mr. T. Maddock, Jr., U.S. Geological Survey; Mr. W. C. Hyler of Air Weather Service, representing the Department of Defense; and Mr. M. G. Kelakos of the Department of State. A number of agencies, both within and outside the Government, participated in the preparatory work for the Congress.

WMO is a Specialized Agency of the United Nations, with Headquarters in Geneva. The Organization is now composed of 102 Member Governments. The Congress was able to welcome its newest Member, Ruanda Urundi (a Belgium territory in Central Africa), during the course of the session. The WMO now has the largest membership of any intergovernmental organization. Delegations of 89 Members participated in the Congress, and 3 non-member countries and 15 international organizations were represented by observers. The Congress is the supreme authority of the organization and convenes only once every four years to review the organization's progress and to develop plans and policies for the ensuing four year period.

The Congress took action on many technical and administrative items, including the use of artificial satellites to obtain weather information, meteorological aspects of the peaceful uses of atomic energy, increased technical assistance for underdeveloped areas, and the use of metric units in international exchanges. It also created a new technical commission in the field of hydrology, and discontinued the old commission on bibliography and publications. A brief description of several of the major decisions follows:

In the field of satellite meteorology, it agreed to encourage the development and use of artificial satellites and to collaborate with the United Nations and other agencies in artificial satellite programs. Much of the discussions at the Congress was based on a comprehensive survey of satellite developments to date, and the role that the WMO might play in furthering its use as a new meteorological observing instrument. The survey had been prepared by Dr. Harry Wexler in his capacity as rapporteur to the WMO. In recognition of his place in this new field of meteorological technology, Dr. Wexler was also appointed to a four-member panel of experts to review the further possibilities of artificial satellites in meteorology, and to suggest how WMO can best assist in these uses.

In response to the increased interest in international circles in the problems of water resources, the WMO established a technical commission for hydrological meteorology in order that the organization may assume its appropriate role in this field. The U. S. has been interested in the water resources problem in numerous agencies, including the United Nations itself, and the delegation therefore made every effort to reach a satisfactory organizational arrangement within the WMO structure. The commission will provide guidance to the Organization and its Members in accordance with the following terms of reference:

1. The study and formulation of meteorological requirements for hydrology, especially with regard to the rapid exchange and arrangement of data.

2. The design and promotion of networks for the measurement and study of those parameters in the hydrological cycle which involve meteorological considerations.

3. The development, improvement, promotion and international standardization of methods, procedures and techniques for:

The application of meteorology to hydrology, for example in such problems as river-stage forecasting, flood forecasting and the study of seiches; and

The provision of Meteorological Services to international hydrology.

Pending the final organization of the commission, Mr. Max Kohler of the Hydrologic Services Division was appointed convenor of a small group of experts which will advise the organization's Executive Committee and Secretariat on water resources problems. This panel will cease to exist as soon as the commission has been formally established.

To deal with the meteorological aspects of the peaceful uses of atomic energy, the organization reestablished its panel of experts on atomic energy. Dr. Lester Machta of OMR has been asked to serve on this panel. In addition to studies of problems associated with selection of sites for atomic reactors and the use of radioactive isotopes for atmospheric research, WMO is likely to be given responsibility for the international coordination of worldwide measurement of radioactive fallout.

The Congress reaffirmed as one of the organization's essential aims the maintenance and improvement of the world network of meteorological observing sta-

tions. To this end, the Congress directed its Executive Committee to make use of all possible means, such as international or multilateral agreements for joint support and financing, technical assistance, and the United Nations Special Fund.

The Congress called upon all Members to adopt metric units and degrees Celsius in all international weather messages by 1963. It was necessary for a number of delegations, including the U.S., to point out the difficulties which would result for users of meteorological information in their areas if such a decision should be implemented. Further study will be necessary before complete conversion to conform with this decision will be possible.

The Congress elected Mr. Andre Viaut, Director of the French Meteorological Service, to continue as President of the Organization for a second four-year term, and reappointed Mr. D. A. Davies of the United Kingdom as the Secretary-General. Dr. Reichelderfer, as President of the North American Regional Association, will continue to serve as an ex-officio member of the Executive Committee. Dr. Andrew Thomson of Canada is the only other North American on the Executive Committee, having been elected as a member at large during this Congress.

The Congress adopted a four year budget of $2,694,000, the budget for the preceding financial period having been $1,700,000. Even with this substantial increase, the WMO is still one of the most modest of all the UN agencies in numbers of staff and annual expenditures. While a substantial part of the increase will be needed to meet rising costs of personnel and services, the remainder will be used to undertake the new programs authorized, to permit greater participation of Members in urgent meetings, and to increase publication of results of the organization's work.

Although numerous compromises were necessary in order to achieve agreement among widely divergent views, the delegation considered that its objectives were largely met. Of particular importance is the expansion of the organization in directions advocated by the U.S., such as hydrology and recognition of the potential of the satellite and atomic energy for meteorological purposes. It became evident again that the U. S. and the Weather Bureau have an increasing responsibility in international meteorology, within the WMO as well as in the framework of our numerous international agreements.

WB Hurricane Forecasting Service

THE federal weather service in the United States was established in 1870 under the Army Signal Corps. One of its first duties was the issuance of warnings in connection with tropical storms. The weather service began receiving reports from Havana, Santiago de Cuba, and Kingston, Jamaica, about August 1873, and what were probably the first hurricane warnings were issued in the form of cautionary signals from Cape May, New Jersey to New London, Connecticut on August 23, 1873, for a storm offshore. The first Signal Corps weather map to show a hurricane indicated one off the coast between Savannah and Jacksonville on September 28, 1874. The network of observations useful to hurricane reporting was greatly improved when on July 7, 1889 Congress passed a bill authorizing the establishment and operation of stations throughout the West Indies and around the Caribbean.

On October 1, 1890 the organic act creating the Weather Bureau was approved with responsibility for its operation assigned to the Department of Agriculture. Prior to 1898 warnings had been issued only to United States coastal areas, but in that year the Spanish-American War created a demand for warnings for shipping and the military. The Hurricane Warning Service was organized at that time with the establishment of a forecast center in Kingston, Jamaica, which was transferred to Havana in 1899. All areas of the West Indies were given the benefit of the service, as they have been to this date.

In these early days forecasting of hurricane motion was based primarily on tide indications and cloud movements with local barometer readings used as short-range signs. At least as early as 1895 forecasters had some idea of antecedent conditions for hurricane formation. Garriott stated that the first indications in the West Indies were abnormally high pressure and unusually cool, clear weather, preceding the storm by several days. He also recognized the effects of dynamic anticyclogenesis in connection with hurricanes and listed a number of empirical rules relating recurvature to the movement of extra-

WEATHER BUREAU HURRICANE FORECAST CENTERS AND AREAS–ATLANTIC

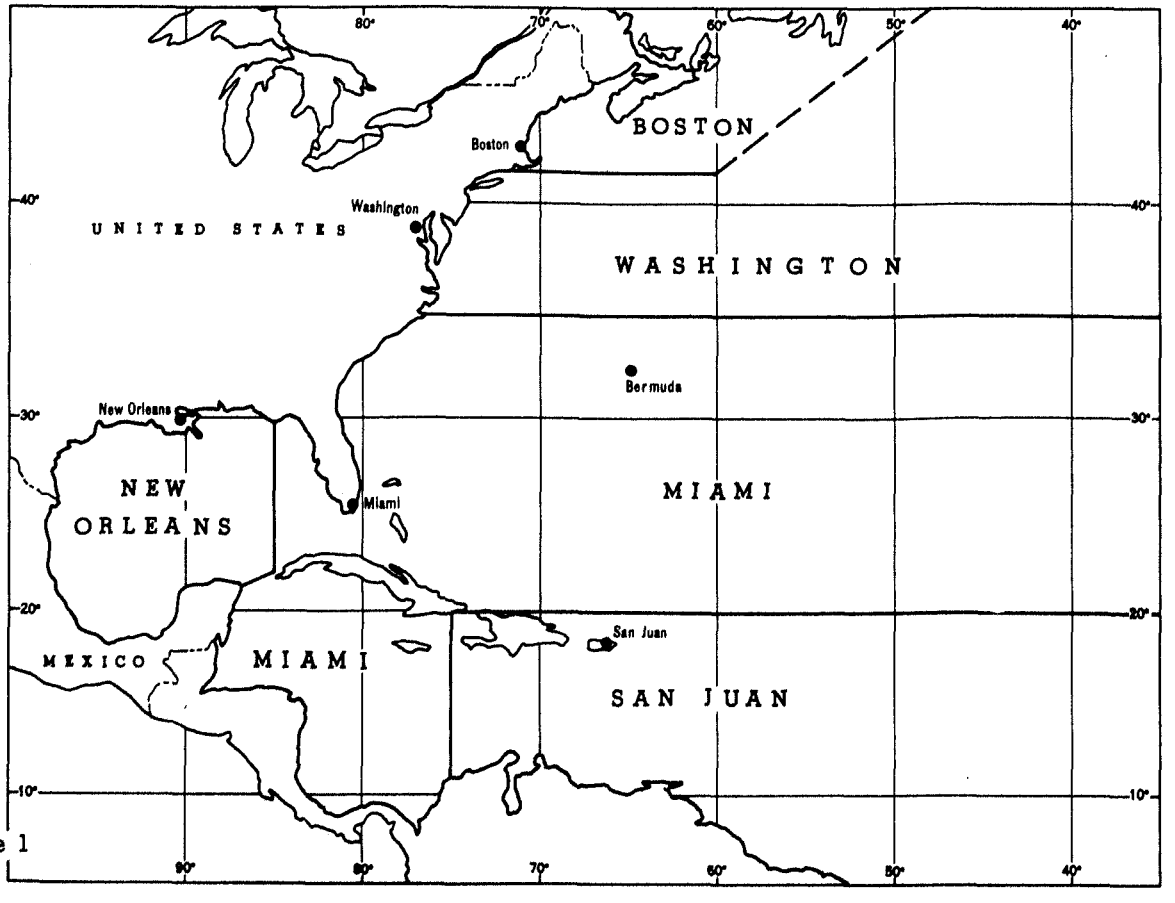


Figure 1

WEATHER BUREAU HURRICANE FORECAST CENTERS AND AREAS–PACIFIC

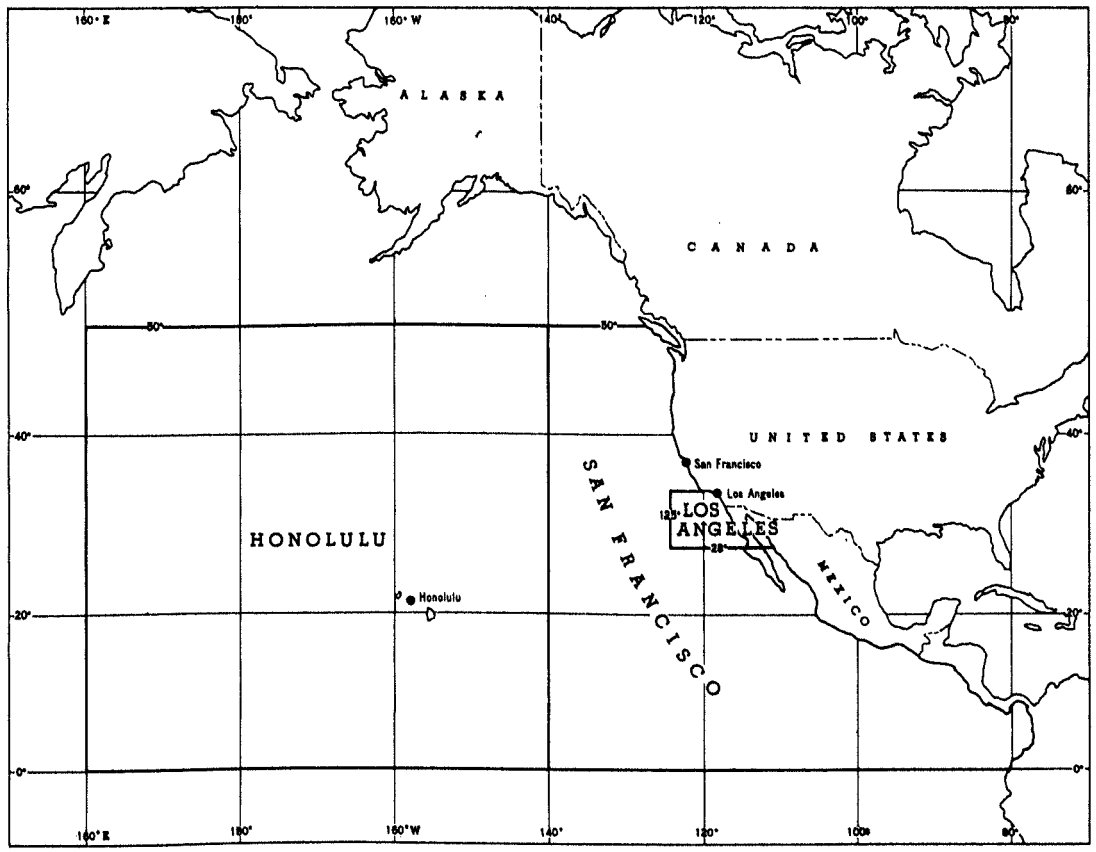


Figure 2

tropical systems.

In 1902 the Hurricane Service was transferred to Washington and shortly afterwards hurricane forecasting took an important stride forward with the development of radio and the possibility of obtaining weather reports from ships at sea. The first of these was received in 1905 and the first to indicate a hurricane was from the S. S. Cartago near the coast of Yucatan on August 26, 1909. The marine observations program was steadily expanded until by 1935 more than 21,000 ship observations were received from the hurricane area of the Atlantic during the six months that constitute the hurricane season (June-November).

As a result of this increasing data supply Bowie was able to publish in 1922 a rather comprehensive study of hurricane formation and movement. He showed that forecasters of that day considered both the convective theory and the effect of impulses from middle latitudes in explaining formation. He also found that winds at 3 to 4 km in the right front quadrant of the storm were representative of the wind system that carried the hurricane and that except for variations caused by passing systems to the north, a hurricane tended to follow the outer isobar of the subtropical high. As more pilot balloon observations became available, refinements were made in the technique of correlating hurricane movement with upper winds. Norton, for example, applied the concept of a "steering level", which was chosen on the basis of the intensity or stage of development of the storm.

In a major reorganization of the Hurricane Warning Service in 1935 centers were established in Jacksonville, New Orleans, and San Juan, and continued in Washington. Along with this decentralization, a continuous 24-hr watch was instituted for the hurricane season and a special hurricane teletypewriter system was set up between Jacksonville and Brownsville. At the same time, ship and coastal observations were increased to four a day. The upper-air program was gradually improved, and in 1937, with the establishment of the radiosonde network, more complete upper-air information enabled forecasters to begin forecasting movement and changes in direction with a higher degree of confidence. In 1943 aircraft reconnaissance was found to be feasible when Col. J. P. Duckworth flew into the eye of a hurricane in the Gulf of Mexico. The following year Air Force and Navy planes began reconnaissance of hurricanes on a fairly routine basis. Nighttime reconnaissance is a more recent development made possible by the use of radar.

In 1943 the Jacksonville center was transferred to Miami. Mean-

while a center of the New England area had been established at Boston. Miami was selected as the location for the Joint Hurricane Warning Central (with participation by the Weather Bureau, Air Force, and Navy), which was given responsibility for coordination of all hurricane advisories.

Basic instructions for the operation of the Hurricane Warning Service are outlined in Chapter B-50, Vol. III of the Weather Bureau Manual. In addition, certain other procedures are included in the annual Hurricane Warning Service Agreement between the Weather Bureau, Navy, and Air Force, in the manual of operations for teletypewriter circuit 7021, and in various circulars that are issued from time to time as new developments or requirements arise. Since most of these publications are generally available, only a brief survey of the current forecast organization will be given here.

Hurricane forecast centers responsible for issuing advisories and warnings for tropical storms in the Atlantic, Caribbean, and Gulf of Mexico areas are located at San Juan, New Orleans, Miami, Washington, and Boston. The areas of responsibility for these centers are shown in figure 1. Advisories for tropical storms in the Atlantic north of 35°N are issued and included in marine weather bulletin broadcasts as long as the storms are west of longitude 35°W. South of 35°N advisories are issued as far east as available reports permit detection and tracking of the storm. While a formal display of warnings is not ordered by the Weather Bureau for the islands of the Caribbean, except under a few specific local agreements, it is generally accepted that the Weather Bureau is the primary agent for tropical storm warnings throughout the area. The hurricane warning service in the Pacific is assigned to forecast centers at Honolulu, Los Angeles, and San Francisco, areas of responsibility for which are shown in figure 2.

In view of the widespread and serious effects of hurricanes it is important that ideas and advices of the various forecast centers be coordinated to avoid the issuance of conflicting or confusing information to the public. Consequently, when a hurricane is in position to affect more than one area of forecast responsibility in the near future, telephone consultations between forecasters at the responsible centers are held prior to the issuance of advisories and the display of warnings near the boundary of the two areas. Consultations by telephone or teletypewriter are also held between the responsible forecast offices and the National Weather Analysis Center in order to exchange ideas and insure that there are no inconsistencies between NAWAC's analyses and prognoses and the advisories from the hurricane forecast centers. JNWP material is taken into account. Occasionally representatives of the Extended Forecast Section also take part in the telephone conferences. Local offices are also included in conference calls or may be called directly when necessary to insure maximum understanding of mutual problems and procedures.

The Miami Office is responsible for coordinating the advisories of all Weather Bureau centers with those of the Fleet Hurricane Forecast Facility at Miami and for providing the Air Force Hurricane Liaison Officer at Miami with the coordinated advisories. Coordination of aircraft reconnaissance and of requests for special observations from military establishments or from other meteorological services is also a function of the Miami center.

Each year for the past several years the Weather Bureau airplane has been made available for flights over coastal areas by staff from local offices and forecast centers. This has enabled those responsible for warning services to view hurricane-vulnerable coastal sectors from the air and check on new construction and residential developments within reach of hurricane tides. Last year flights took place over the coastal areas between Brownsville and Norfolk and this year between Baltimore and Eastport.

New Polar Research Unit

WITH the ending of the International Geophysical Year a special National Science Foundation grant to the Weather Bureau for IGY interdisciplinary scientific studies has resulted in the establishment of a new polar meteorology research unit in the Office of Meteorological Research. Mr. Morton J. Rubin, who for a number of years has been interested in synoptic meteorology of the Southern Hemisphere and the global effects of the polar regions on the Earth's atmosphere, will be the Chief of the Unit. Mr. Rubin recently returned from a year at the USSR Mirny Station, Antarctica, where he was the US-IGY representative for 1958. Mr. Rubin will have several key meteorologists from US-IGY Antarctic stations, and also several meteorological aids.

Prior to the IGY, scientific exploration of the Antarctic was by single expeditions. There were never more than two or three widely scattered stations over a continental area of more than five million square miles, except for the concentration of British, Argentine, and Chilian surface and pilot balloon stations established on the Palmer Peninsula. However, because of the coordi-

nated efforts of the various countries participating in the IGY Antarctic programs there are twice daily upper air observations for synoptic analyses from about 20 stations, most of which were rawinsonde stations. Now for the first time sufficient meteorological observations are available for a reasonably accurate description of atmospheric structure to be prepared in quantitative terms.

In addition to the investigations of Antarctic atmospheric-oceanic-glaciologic interactions, the Unit has a second responsibility for studies of the polar stratospheric structure and circulation, and ozone distribution. A preliminary report of stratospheric conditions has been prepared based on the 50-millibar charts drawn by Mr. W. B. Moreland, Head of the IGY Antarctic Weather Central at Little America in 1957, and by Mr. N. J. Ropar, meteorologist at the Central during 1958 under the direction of Mr. T. I. Gray, Jr., Head of the IGY Antarctic Weather Central in 1958. There are plans for augmenting these charts with checked data from the IGY World Data Center A. Ozone measurements by Messrs. Moreland, B. C. Harlin, and W. S. Weyant, taken at Little America, and also available from other stations, will be utilized in establishing the relationship between the flow patterns and ozone distribution.

Exchanges of air between the stratosphere and troposphere will be studied with the aid of ozone observations. Stratospheric charts for the Arctic, to be made available from another project, will be compared with those for the Antarctic to study further the significant differences in flow pattern and seasonal temperature patterns.

One of the first tasks being undertaken by the Unit is to calculate the advection of air into and out of the Antarctic continent, relating it to the meteorology of the Southern Hemisphere and general circulation processes. Also the solar radiation and heat flux observations obtained at the South Pole are being studied in detail in preparation for the study of similar data from the other IGY Antarctic stations. Eventually the Unit will attempt to determine the transport of important parameters such as heat and moisture into, or out of, the Antarctic as a function of time. These transports in turn will be correlated with observations made by glaciologists of annual accumulations of ice with the view of obtaining better figures on the annual budget of the Antarctic ice. Oceanic and sea-ice data will also be studied from the standpoint of mutual interactions between atmospheric processes and various oceanic phenomena, such as the Antarctic circumpolar and coastal currents, the various oceanic convergent and divergent zones, and those affecting the distribution of sea ice.

In keeping with the international and interdisciplinary basis of the IGY effort, there is planned a complete exchange of information and results of research with scientific workers in other fields and in other countries. It is hoped also that there will be opportunities for foreign scientists to participate in the work of the Unit for short periods during visits to this country.

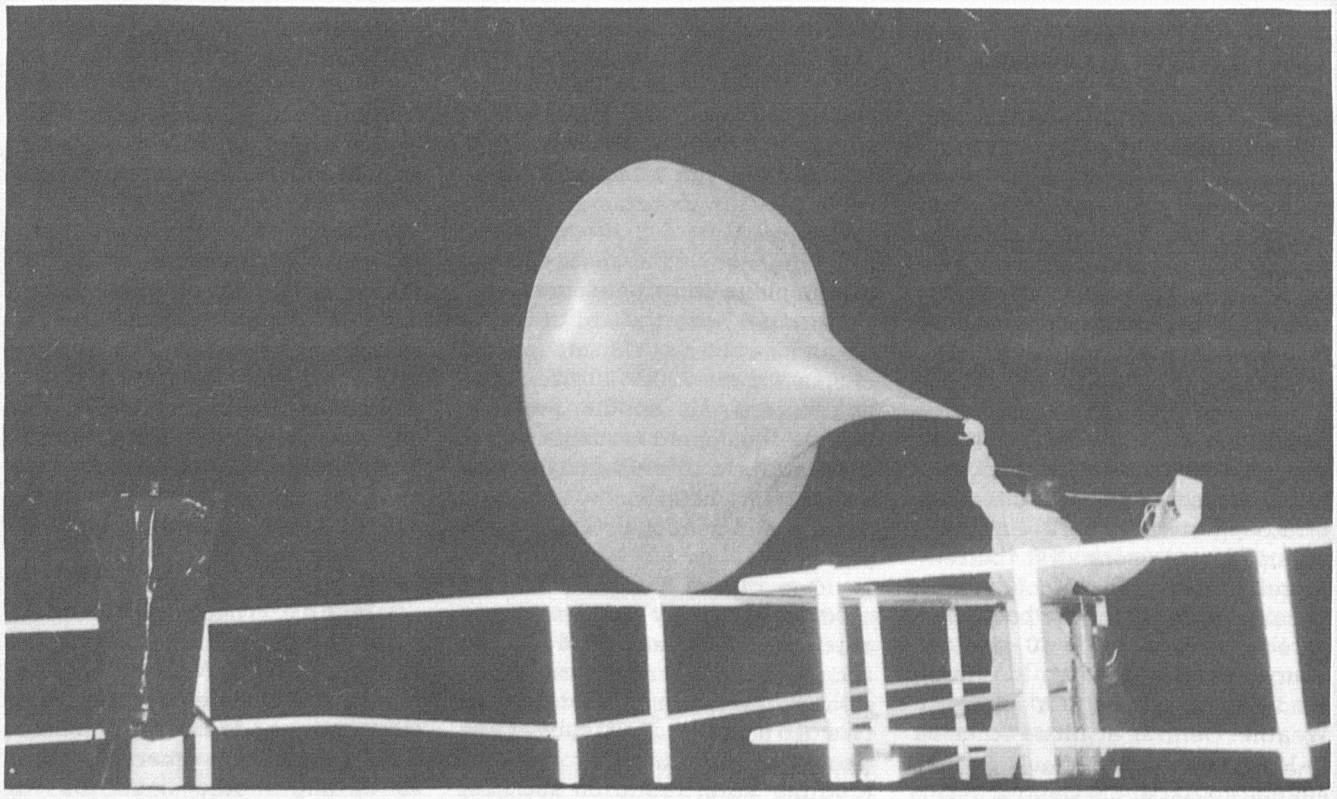
Record High Soundings Made on USNS GOETHALS

TWO Atlantic Weather Project men, Messrs. R. D. Bottom and Frank Morine tested their idea on the best technique for attaining maximum bursting elevations in upper air soundings. All the balloons were taken from the container, shaken loosely, and conditioned in the standard Hotpack Conditioner at a temperature setting of 65 on the scale for 24 hours before use. Approximately 20 minutes before release the balloons were removed from the conditioner, care being taken that the balloons were not touched by the bare hand or brushed against any object, and inflated, clean, soft, gloves were used. The rate of helium flow was regulated so that 15 minutes were required to inflate the balloon with 1700 grams of gas. At the release care was taken again not to bruise the balloon and gloves were worn. He states, "The significant factor in my opinion was that the balloons, all 600 and 800 grams in weight, were underinflated relative to their potential with a slow flow of gas resulting in low ascensional rates - approximately 240 meters per minute to 400 mb and 300 meters per minute from 400 mb to burst."

The procedure used produced extremely good results. The average for 16 balloons followed to bursting altitude was 32,060 meters. Three bursts using 800 gram balloons averaged 34,918 meters with one balloon reaching 36,112 meters. Over 65 percent of the runs followed to bursting altitude reached the 10-mb surface.

This outstanding performance was made during a regular voyage between New York and the Canal Zone on the USNS GEORGE GOETHALS, one of two Military Sea Transport Service vessels in the Atlantic on which the Weather Bureau operates surface and upper air programs.

Two MSTS vessels being added to the transient ship program in the Pacific are scheduled to have inflation shelters 16 feet high with roll up doors fore and aft to permit

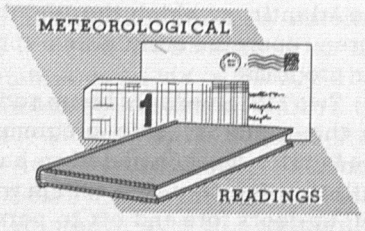


High Winds Make Shipboard Launching of Radiosonde a Difficult Task.

easier launching of the larger balloons. Also the Weather Bureau is planning to contract for development of a new technique in wind finding equipment which will permit making a full rawinsonde from the moving ships. With these improvements it will be possible to obtain the same results at sea from a moving ship as are presently obtained at the land rawinsonde stations.

New Feature for Topics

BEGINNING with the July issue TOPICS will carry a column on the subjects discussed during the principal staff conferences in the Central Office of particular interest to field stations and field employees. The "Column" probably will be presented under the heading "Briefs from the CO Friday Staff Conferences". The purpose will be to convey the most important aspects of plans and problems under consideration currently in the Central Office and to bring out in particular those subjects of greatest interest to the Field Establishment of the Weather Bureau and those things which are likely to be of concern to field employees. It has been a long standing practice to examine major problems through group discussions in staff meetings and to analyze them and find the best solutions. Briefs of these discussions will contribute to "good communications" (in the broadest sense) between the Central Office and the Field and between Field and Central Office through subsequent questions and answers by correspondence or during field visits.



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXVI: Observational Studies of the General Circulation by Jerome Namias and Philip F. Clapp, on pages 551 through 566 of the Compendium of Meteorology.

About the Assignment: The

global nature of meteorology is apparent when we consider the general circulation. In this assignment, information about the large scale patterns in the northern hemispheric atmosphere is presented based on expanded, yet still too restricted, observational coverage.

QUESTIONNAIRE

Col. 61 Which of the following pairs of quantities are not significantly correlated?

1. Sea-level polar easterlies and 10,000-ft. zonal westerlies.
2. Average sea-level pressure at 70°N. and average sea-level pressure at 35°N.
3. Sea-level polar westerlies and 10,000-ft. sea-level zonal westerlies.
4. Solenoid index and 10,000-ft. zonal westerlies.

Col. 62 Which of the following is not a characteristic of the initial high index stage of an index cycle?

1. Pressure systems oriented east-west.
2. Jet stream expanding and increasing in strength.
3. Little air mass exchange.
4. Minimum latitudinal temperature gradient in higher middle latitudes.

Col. 63 Which of the following is not a normal characteristic of the jet stream in the northern hemisphere?

1. It is located near the greatest change in the height of the tropopause.
2. It is circumpolar in nature only in winter.
3. It coincides with the strongest mid-tropospheric meridional temperature gradient.
4. It is farther north and weaker in summer.

Col. 64 When and where are the easterlies with greatest depth found?

1. Summer in polar regions.
2. Winter in polar regions.
3. Summer in low latitudes.
4. Winter in low latitudes.

Col. 65 In which direction would the Icelandic low be most likely displaced at 300 mb relative to its sea-level position?

1. Southwestward
2. Northwestward
3. Southeastward
4. Northeastward

Col. 66 Over what area are the large wave lengths and amplitudes of the very long waves found in the northern hemisphere?

1. North America
2. Pacific Ocean
3. Asia
4. Atlantic Ocean

Col. 67 What is the distribution of (1) subsidence and (2) ascent around subtropical high pressure systems?

1. (1) eastern portion
   (2) western portion
2. (1) western portion
   (2) eastern portion
3. (1) northern portion
   (2) southern portion
4. (1) southern portion
   (2) northern portion

Col. 68 What has Cressman concluded concerning waves with increasing lengths in an upstream direction?

Superior Accomplishment Awards

Harold Berner	Meteorologist	Milwaukee
James Cornell	Meteorologist	Corpus Christi
Tyron Espeseth	Meteorologist	Billings
William Fenwick	Photostat Operator	Central Office
Thomas Fleming	Meteorologist	Tallahassee
Ruth Goodin	Clerk-Stenographer	Miami
May Goodwin	Clerk-Stenographer	Columbia
Fern Gwynn	Property Clerk	RAO Salt Lake City
Alice Heuer	Clerk-Stenographer	Milwaukee
Bruce Hosmer	Electronics Specialist	Puerto Montt, Chile
Russell Hovey	Electronics Specialist	Lima, Peru
Otis Johnson	Meteorological Aid	Idaho Falls
Betty Kitts	Clerk-Stenographer	Cleveland
Niilo Koski	Electronics Specialist	Guayaquil, Ecuador
Marvin Kuykendall	Meteorologist	Portland, Oregon
Charles Shoemaker	Meteorologist	Allentown
Arza Straight	Meteorological Aid	Central Office
Edmond Striker	Meteorologist	South Bend
Robert Sullivan	Electronics Specialist	Antofagasta, Chile
Rex Thompson	Radiosonde Specialist	Spokane
Ruth Todahl	Clerk-Typist	Seattle
James Travis	Electronics Technician	Las Vegas
Urban Wacker	Electronics Specialist	Quintero, Chile
Leslie Warren, Jr.	Meteorologist	Billings
Thomas Weitz	Meteorologist	Burbank
Mary Wollensack	Clerk-Stenographer	Denver
Dorothy Campbell	Clerk-Stenographer	RAO Ft. Worth
Annie Grimes	Meteorological Aid	Central Office
Emma Weaver	Administrative Asst.	Central Office
Evelyn Spencer	Secretary	Central Office
Van Neely	Budget Analyst	Central Office
Harlan Saylor	Meteorologist	NAWAC
Ray Jorde	Meteorological Aid	Central Office
Donald Marier	Meteorological Aid	Central Office
Arthur Pagnozzi	Meteorologist	New York
Robert Ferry	Meteorologist	Central Office
Leonard Hand	Meteorologist	Central Office
Charles Trainer	Meteorologist	Central Office
Kelly Anderson	Meteorologist	Rochester, Minn.

1. The most easterly wave will accelerate.

2. The most westerly wave will decelerate.

3. The most westerly wave will accelerate.

4. The most easterly wave will decelerate.

Col. 69 According to Wexler, what is the approximate amount of heating or cooling just east of Nova Scotia during February?

1. Heat loss of about 400 Cal/cm^2/day.
2. Heat loss of about 700 Cal/cm^2/day.
3. Heat gain of about 400 Cal/cm^2/day.
4. Heat gain of about 700 Cal/cm^2/day.

Col. 70 What is the precentage variation between the average zonal hemispheric wind speed as a whole and for weekly periods?

1. 0-50
2. 25-100
3. 50-150
4. 75-200

CORRECTION

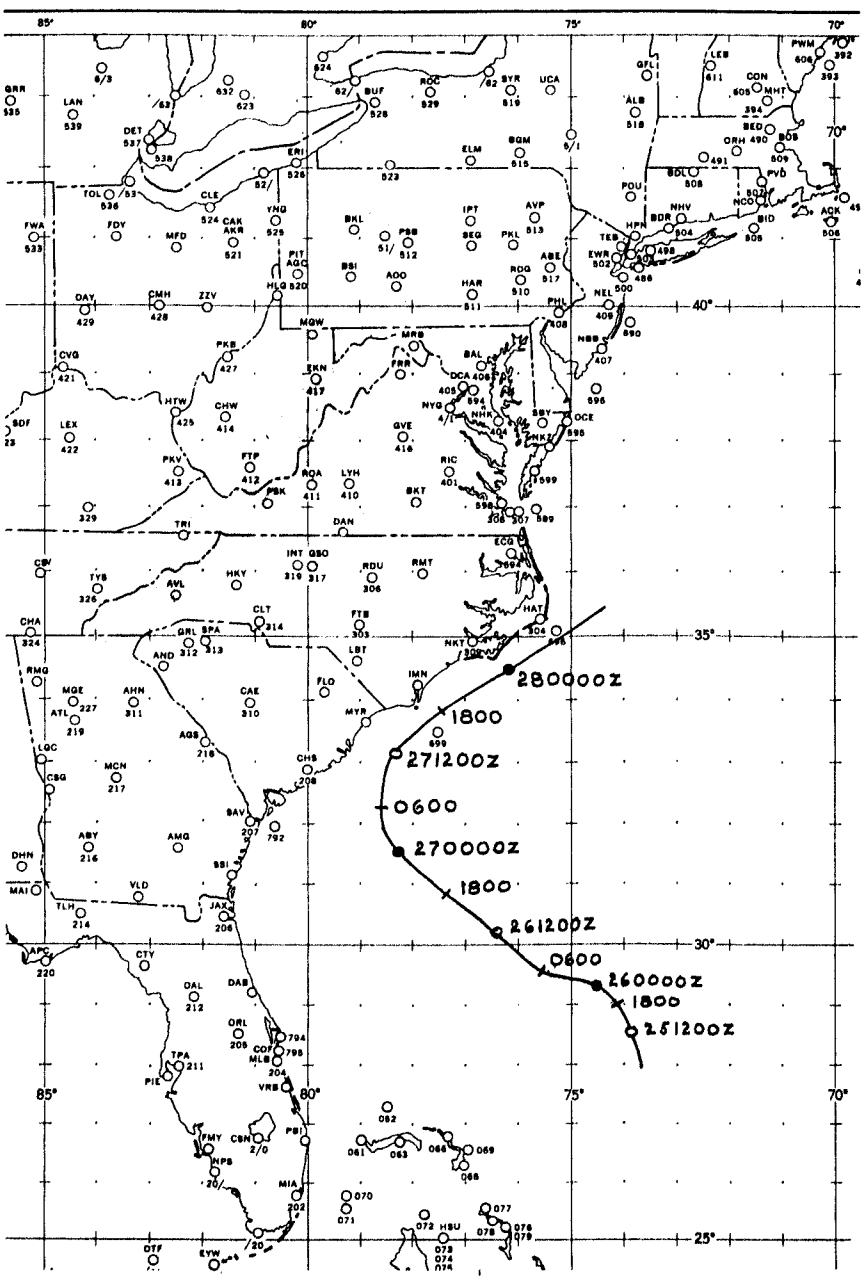
In the April issue of TOPICS on page 72, Meteorological Readings, Assignment No. XXI, should read Assignment No. XXIV.

Forecasters' Forum — *Winds Aloft and Hurricane Movement*

An old rule known to sailors for years states that if a ship is in the vicinity of an approaching tropical storm and the wind veers, the vessel lies to the right of the direction in which the storm is moving (in the dangerous semicircle); if the wind backs, the vessel lies to the left of the direction in which the storm is moving (in the navigational semicircle). If the wind is steady in direction but increasing in force, the ship is in the direct path of the storm.

During work with mean wind through deep layers within the hurricane circulation, it became apparent that such winds display surprising conservatism and that they may be used to apply the old sailor's rule to determine to which side of a coastal or island rawin station a tropical cyclone is likely to pass. It is necessary only to observe the azimuth angle of the rawin balloon at some fixed height, say 6 km, and observe the six-hourly or 12-hourly changes in the angles. After the hurricane is near enough so that the station is within the circulation of the storm, usually 300 miles or less away, these changes give good indications as to which side of the station the current movement of the storm would take the center. They do not, of course, anticipate changes in the circulation features which might subsequently alter the course of the storm.

The table and corresponding trajectory of the hurricane shows



DATE & Z TIME	250000	250600	251200	251800	260000	260600	261200	261800	270000	270600	271200	271800
GREENSBORO N.C.	304.2	—	351.0	—	055.2 +64.2	—	67.9 +12.7	—	91.8 +23.9	—	69.9 -21.9	—
HATTERAS N.C.	58.8	—	68.9 +10.1	69.9 +1.0	64.9 -5.0	102.3 +37.4	103.6 +1.3	120.3 +16.7	137.8 +35.5	151.2 +13.4	155.3 +4.1	161.4 +6.1
ATHENS GA.	45.4	—	45.3 +2.1	—	59.8 +14.5	—	90.0 +30.2		36.6 -53.4	—	343.4 -53.2	—
CHARLESTON S.C.	—	—	50.8	47.8 - 3.0	58.6 +10.8	62.9 + 4.3	50.8 -12.1	48.2 - 2.6	33.4 -14.8	21.2 -12.2	338.9 -42.3	317.0 -21.9
JACKSONVILLE FLA.	39.8	—	58.1 +18.3	62.4 + 4.3	42.3 -20.1	36.8 - 5.5	21.6 -15.2	356.9 -24.7	344.4 - 12.5	—	—	—

Rawin azimuth angles and 6- or 12-hour changes observed at 6 km during the approach of Hurricane Helene, September 1958

the use of these 6 km azimuth angles for several stations as Helene approached the coast September 25-27, 1958. It will be observed that the data for Charleston show veering during the 12-hour period 251800-260600Z, at which time Helene was making a left turn which, if continued, would have taken the storm inland south of Charleston. Thereafter the data consistently indicated a course to the north of Charleston. The data from the other stations also correctly indicate the current storm motion in reference to the individual locations. At Hatteras the data through 271800Z indicate that the center would pass to the west of the station. That it did not do so is attributed to the approach of a vigorous short wave trough from the west.

Rawin stations along the coast, particularly island stations where little information other than local data are available, may find the above useful in helping them to decide on which side of the station an approaching storm is likely to pass. There is, of course, nothing unique about the 6-km. level and data or any other relatively deep layer will be just as good. Changes should, however, be computed at some fixed level, since the vertical variation may greatly exceed that with time.

B. I. Miller
WBO Miami, Fla.

Length of Service Awards

30-Year Awards

Asheville, N.C. NWRC
William C. Drapier

Atlanta, Ga.
David W. Miller

Central Office
Wayne H. Bartlett
Arthur J. Crowshaw
Charles M. Lennahan

Chattanooga, Tenn. WRPC
Verne D. Steves

Cincinnati, Ohio WBO
Delance O. Martin

Erie, Pa. WBAS
Arvid S. Klemetsmo

Houston, Tex. WBO
Clayton B. Crooker

Kansas City, Mo. RAO
Howard D. Wilson

Los Angeles, Calif. WBAS
Leo A. Sergius

New York, N. Y. WBO
Emil J. Ruckert

St. Louis, Mo. WBAS
George N. Brancato

Salem, Oregon WBAS
Merl S. Main

San Francisco, Calif. PWP
Roger C. Nichols

Savannah, Ga.
Alfred W. Taylor

Thomasville, Ga. WBO
Clarence E. Skillman

Toledo, Ohio WBAS
Don E. Coleman

Wilmington, N.C. WBAS
Howard W. Ulsh

25-Year Awards

Central Office
Agnes B. Erkens
Frederick W. Fauntleroy
John P. Rea

Chicago, Ill. WBFC
Samuel M. Bromberg

New Orleans, La. WBAS
Robert J. Waite

Salt Lake City, Utah RAO
Everett Bingham

Wilmington, N. C. WBAS
Woodrow W. Lennon

15-Year Awards

Asheville, N. C. NWRC
Francis M. Hallingse
Battle Creek, Mich. OCDM
Donald W. Catlin
Binghamton, N. Y. WBAS
Harry R. Houghton
Block Island, R. I. WBO
William B. Phelan
Burlington, Vt. WBAS
Bernard A. Rugg
Caribou, Maine WBAS
August E. Johnson

SHIFT POSITIONS ONE AT A TIME *IT'S SAFER*

STAY WITH IT — *A CAPSIZED BOAT F L O A T S*

THE week beginning June 28 - including the July 4th weekend has been designated National Safe Boating Week.

To keep boating safe, the President has called upon all boatmen, boating organizations, the boating industry, State and Federal Agencies, and all other interested groups to exert greater effort during that week and throughout the boating season, to keep boating safe and pleasant.

First WSR–57 Radar Installed at Miami

THE preproduction model of the new WSR-57 radar was installed and placed in trial operation at Miami, Florida, the last week in May. The next issue of TOPICS will contain an article on the complete installation and over-all performance of this new radar.

NEW MIC'S

Bismarck, North Dakota

SANFORD R. MILLER, now Principal Assistant at Des Moines, Iowa, has been selected as the new MIC at Bismarck, succeeding Mr. Frank J. Bavendick.

Mr. Miller is 45, and began his Weather Bureau career on January 3, 1939. His assignments have been at St. Joseph, Kansas City, New York, Seattle, Denver, Shannon Airport (Ireland), Wake Island (MIC), and Des Moines.

Wenatchee, Washington

ALAN H. JONES of the Central Office (Office of Program Planning) has been selected as the new MIC at Wenatchee. He has just completed the Advanced Study Group and will arrive at Wenatchee during the latter part of June.

Mr. Jones is 41. He first entered the Bureau on November 10, 1937 as Airway Observer at Laguna Beach, California, and remained in such status there and at Long Beach, California, for portions of 1938 and 1939, when he resigned. After serving in the Army Air Force from 1941 through 1945, he was appointed on February 26, 1946 at Portland, Oregon, and remained there until April 1952, when he transferred to the Central Office.

RETIREMENTS

Walter Dick

WALTER DICK, who has been applying his knowledge of the behavior of the Mississippi to flood forecasting operations since 1920, retired from his position as MIC at Moline May 31 after more than 37 years of service with the Weather Bureau.

A native of Iowa, Mr. Dick graduated from Dubuque High School and attended the University of Chicago. He entered the Bureau on April 17, 1920, as an Assistant Observer at Dubuque, resigning later that same year to continue his education. He returned to the Bureau in 1922, serving at his initial station until 1926 when he transferred to St. Louis. With the exception of two years (1927 to 1929) as OIC at Medford, Mr. Dick's entire service has been at stations bordering the Mississippi from Dubuque to St. Louis. In 1929 he was selected as MIC for the Dubuque station where he served most creditably for 15 years, followed by approximately 15 years of equally competent performance at Davenport and Moline.

Mr. Dick has many varied interests which he plans to develop into full-time pursuits after retirement. He has been associated with the Boy Scouts for over 40 years, serving on the Area Council and assisting in the promotion of the Advancement Program for the past several years.

An avid sportsman, Mr. Dick places hunting and fishing high on his list of hobbies; he is a life member of the National Rifle Association and has devoted considerable time to coaching and

lecturing on rifle marksmanship.

Shortly after his retirement, Mr. and Mrs. Dick plan to begin extensive travel and eventually they plan to settle somewhere in the Southwest. For the next several months, however, their mailing address will be 404 West 53rd Street, Davenport, Iowa.

Clarence R. Kallquist

CLARENCE R. KALLQUIST, MIC at Chattanooga since 1944 and a veteran of more than 42 years of government service, retired May 31.

Mr. Kallquist joined the Weather Bureau on March 13, 1922, following a five-year tour of duty in the Navy. Just prior to his discharge from the military service, he completed the weather course at the U. S. Naval Air Station in Pensacola. Mr. Kallquist's initial Weather Bureau assignment was as observer at the Due West, South Carolina, kite station. Two years later he transferred to Savannah, but in 1926 he resumed his work in the field of upper air observations by accepting a transfer to Groesbeck. In April 1927 he was granted leave of absence to participate in the Hobbs Expedition (University of Michigan) for the purpose of studying weather conditions in Greenland. He and his radio operator arrived in Greenland in September, remaining there until the following April, with the nearest inhabitants 126 miles away. He returned to duty at Groesbeck on September 1, 1928, with subsequent assignments at Salt Lake City, Seattle, and Portland, Oregon. In 1938 Mr. Kallquist was selected for the MIC post at WBAS New Orleans, where he served until 1944 when he accepted his most recent assignment as MIC at Chattanooga.

Mr. Kallquist is an active member of numerous clubs and societies, including the American Polar Society and the Explorers Club. His main hobbies are deep sea fishing and gardening, with dahlia raising his specialty. He is a present member and past president of the Dahlia Society of Tennessee, and a member of the Southern States Dahlia Society and the American Dahlia Society, having served as vice-president of the latter. Mr. Kallquist expects to keep pleasantly occupied after retirement pursuing those interests for which he has heretofore been unable to find sufficient time. He and Mrs. Kallquist will maintain their residence in Chattanooga where friends may contact them at 3607 Monte Vista Drive.

Archibald D. Ross

ARCHIBALD D. ROSS, Meteorologist in Charge at Concord, N. H. since 1937, retired May 31 after nearly 35 years of Weather Bureau service.

A native of Boston, Mr. Ross attended Dorchester High School and the Massachusetts Nautical School, where he studied navigation. During World War I he served with the U. S. Navy in European waters as a member of the gun crew on an anti-submarine patrol. From 1919 to 1924 he was employed as a deck officer by various steamship companies operating in the Caribbean area.

Mr. Ross entered the Weather Bureau as a Junior Observer at Richmond on September 16, 1924. In October 1926 he transferred to Boston, where he inaugurated the airway service in the New England states. He accepted assignment as Meteorologist in Charge at Concord in 1937, serving in this capacity until his retirement.

Mr. Ross plans to devote considerable time to his two favorite hobbies, woodworking and gardening, after retirement. He and Mrs. Ross will also travel in the United States, Canada, and the British Isles. His mailing address is R.F.D. #3, Plymouth, N. H.

James M. Howe

JAMES M. HOWE, Meteorologist in Charge at Charlotte since 1937, died May 8 at the age of 63. He had been ill since April 8 when he suffered a severe heart attack.

A native of Vermont, Mr. Howe joined the Weather Bureau as a messenger in his home town of Northfield on February 3, 1914, serving there until October 1925 when he left the Weather Bureau for one year. He was reinstated in October 1926 as an Observer at Ithaca, and in June 1928 he was promoted to Junior Meteorologist and transferred to Oswego as Official in Charge, where he remained until accepting his most recent assignment as MIC at Charlotte in July 1937.

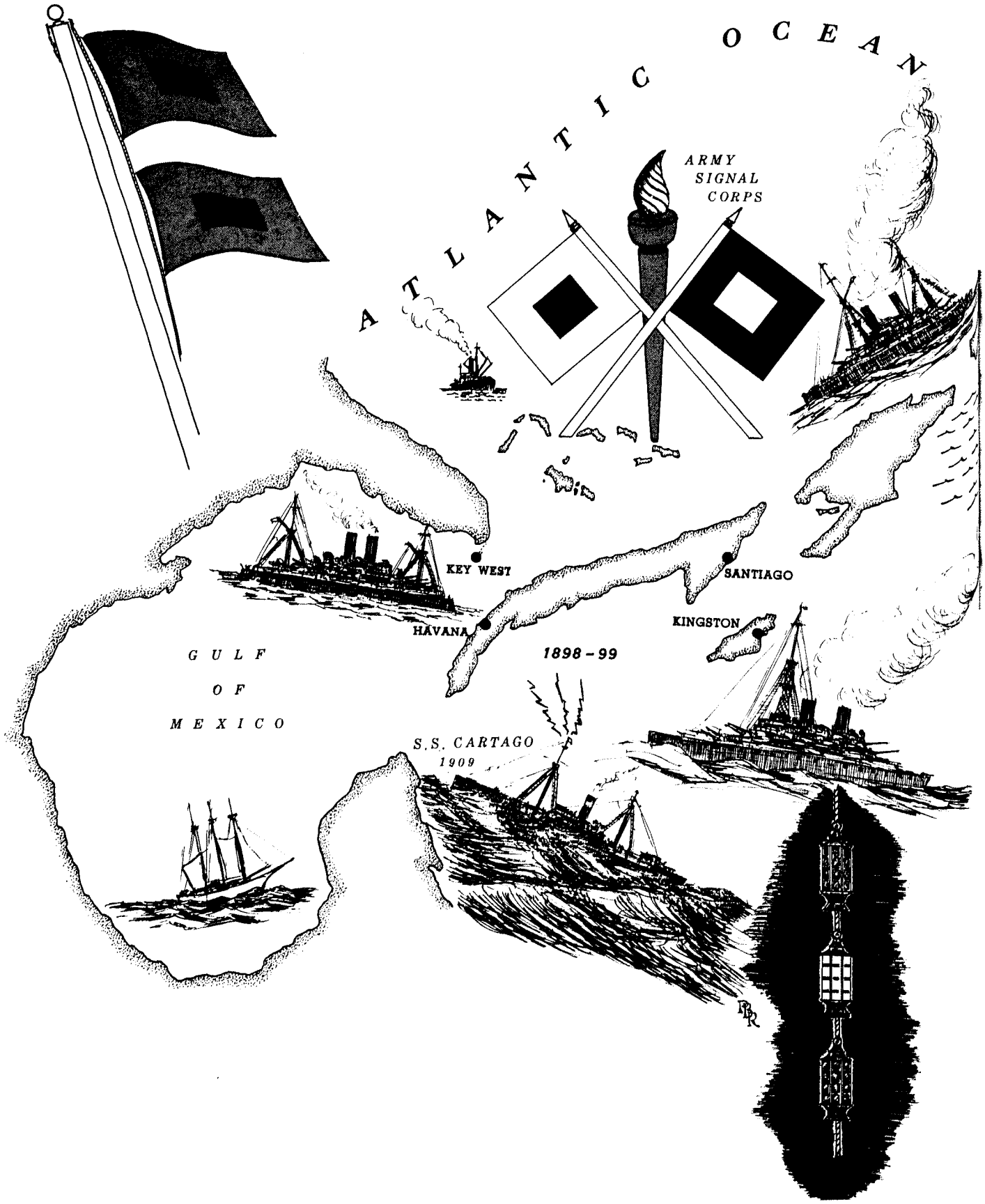
Mr. Howe is survived by his wife, who lives at 3017 Park Road in Charlotte.

Aloysius E. Osborn

ALOYSIUS E. OSBORN, Meteorologist in Charge at Fort Smith when he retired in November 1953, died May 3 at the age of 65.

Mr. Osborn completed more than 32 years in the government, serving at Fort Smith from 1939 until his retirement. The December 1953 TOPICS carried an account of his career in the Weather Bureau.

Mr. Osborn is survived by his wife, who lives at 600 North Greenwood Street in Fort Smith; a sister; and a niece.

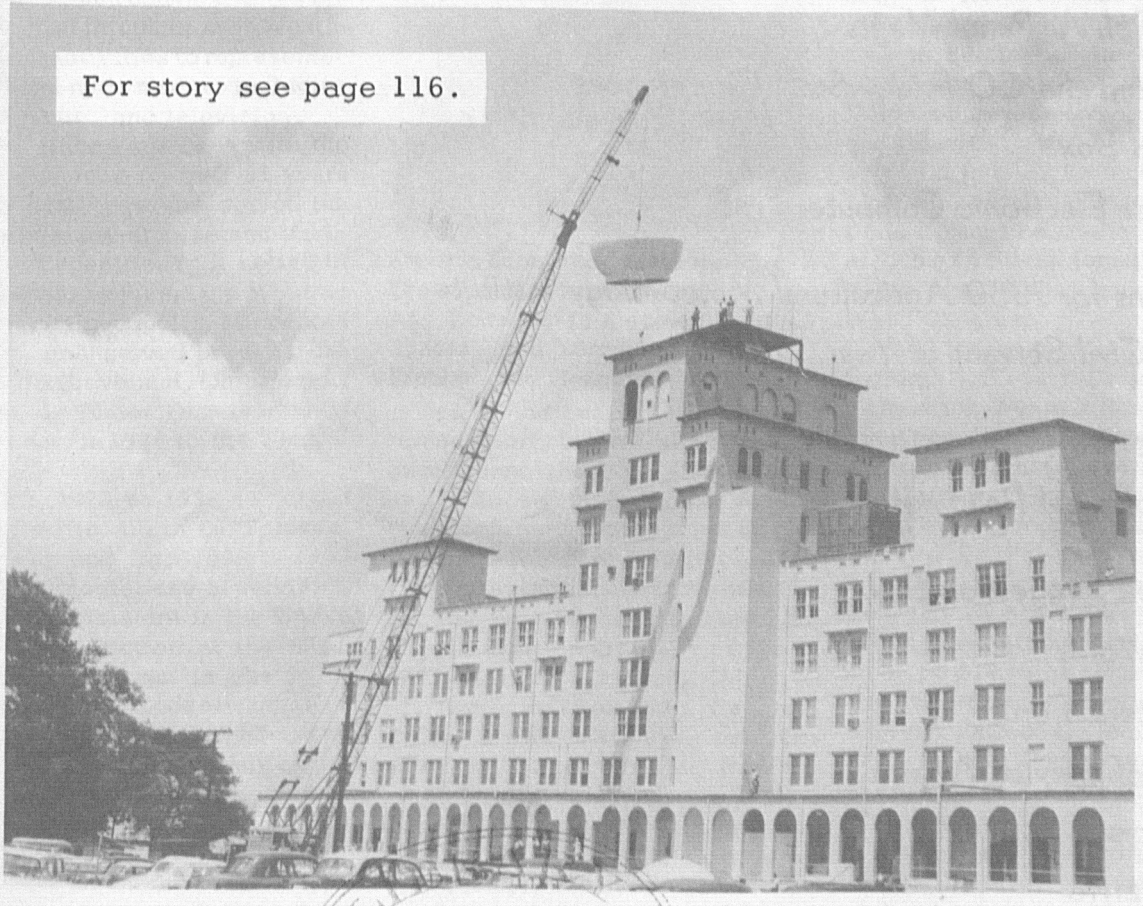

ATLANTIC OCEAN
ARMY
SIGNAL
CORPS
KEY WEST
HAVANA
SANTIAGO
KINGSTON
1898 - 99
GULF
OF
MEXICO
S.S. CARTAGO
1909

U.S. Weather Bureau

WEATHER BUREAU

TOPICS

JULY
1959



For story see page 116.

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WEATHER BUREAU

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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.

PUBLIC INFORMATION COORDINATOR

Norman R. Hagen

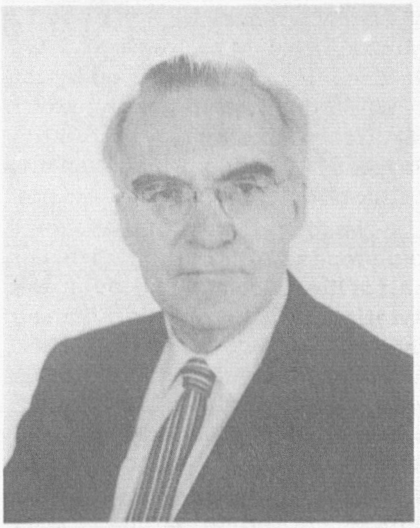
RECOGNIZING the great importance of public information services in promoting good public relations, the Weather Bureau created the office of Public Information Coordinator and designated Norman R. Hagen to head the unit.

The Public Information Office is responsible for the coordination of information activities of the Weather Bureau and facilitates the provision of information on Weather Bureau activities to representatives of all news media, including press, radio, and television.

Mr. Hagen has been with the Weather Bureau for over 31 years and in that time has served the Bureau in many diverse and challenging capacities. A native of Minnesota, he joined the Weather Bureau in Minneapolis, Minnesota in 1928 and served briefly there and at the Cleveland, Ohio Airport Station as Junior Observer until his transfer in 1929 to the Central Office.

From 1929 to 1938 he served as scientific aid in the Forecast Division, and from 1938 to 1943 as Meteorologist and Supervising Technical Assistant in the Codes and Maps Section of the SR&F Division. He was in charge of Meteorological Codes when the Weather Bureau changed from word to figure codes, and many of his code and index number innovations are still in effect. Norm was also in charge of the Daily Map Unit when the present type of daily map was substituted for the old lithographic stone technique.

In 1943 he was selected to act as Weather Bureau Liaison Officer to foreign governments in connection with international meteorological activities and in this capacity collaborated with meteorologists of many allied governments. From 1943 to 1946 he was Weather Bureau Represent-



ative in Europe and Meteorological Consultant to the Chief of the U.S. Air Forces in Europe, General Spaatz, and served in England, France, and Germany.

In November 1944 Norm returned briefly to the United States as member of the U.S. Delegation at the Chicago International Aviation Conference which drew up an interim agreement on civil aviation and established the framework for the Provisional International Civil Aviation Organization (PICAO).

Again in 1945 when the first PICAO meetings were held in Montreal, Norm was invited to attend and he served as the Technical Secretary of the first session of the Meteorological Division. Upon completion of this two-month assignment, the late Edward Warner, first President of PICAO, expressed these sentiments on Hagen's work: "Your high professional standing, your wide acquaintance with the leaders in meteorological science all over the world, your tireless industry, and your skill in finding the necessary formula to express a desired concept or to resolve difficulty have played a major part (in the Meteorological Division's success in arriving at useful agreements)."

From 1946-1952 Norm served as Meteorological Attache accredited to the U.S. Embassies in London and Moscow from which points he was able to act as a liaison officer to the meteorological services of Europe, the Middle East and North Africa.

As Weather Bureau representative in Europe he attended about 40 international meetings in the fields of meteorology, aviation, and telecommunications. He served a term as President of the Meteorological Telecommunications Committee of the WMO and also helped in formulating the basic regulations adopted by the WMO Congress.

Mr. Hagen returned to Washington, D.C. in 1952 and served as Aviation Weather Specialist in the Bureau's growing International Aviation Weather Service Program and later as meteorologist in the Plans and Program Management Office.

He attended Central High School in his home town of Crookston, Minnesota and later studied physics, meteorology, and architectural engineering at Baldwin Wallace College in Berea, Ohio; and at George Washington and Catholic Universities in Washington

Norm is married to the former Ann Sullivan of Johnstown, New York. Mrs. Hagen also is in the information field and heads the Radio and Television Section, Office of Public Information, of the United States Information Agency in Washington, D.C.

Mr. Hagen's "wearing of two hats" —that of meteorologist and newsman for the past five years— has helped in getting hundreds of stories printed on what is going on in the wide world of weather.

First WSR–57 Radar Installed at Miami

DURING May, the first of the new WSR-57 radars was installed at the District Meteorological Office, Miami, Florida, as reported in the last issue of TOPICS. The installation was under the general supervision of Mr. Charles L. Dannheiser and Mr. Dewey R. Soltow, Facilities and Electronic Engineers, respectively, from the Central Office. Inasmuch as this was the first such installation to be made, engineering teams from RAO's New York, Fort Worth, and Kansas City participated for familiarization with installation problems. Region I was represented by Mr. Harry W. Diamond, AET, and Mr. Harry Temple, Facilities Technician, of New York. Region 2 was represented by Mr. Leo E. Young, SET, and Mr. John J. Childers, Facilities Technician, of Fort Worth. Region 3 was represented by Mr. John J. Holstein, SET, and Mr. Alfred D. Miller, Facilities Technician, of Kansas City. In addition, Mr. Lawrence K. Eide, Instructor in Radar Maintenance, WBAS Columbia, Missouri; Mr. Clarence L. Laru, AET, Miami; Mr. Ansel L. Bryan, AET, Miami, and Mr. Leonard G. Pardue, Jr., Technical Assistant at WBO Miami, also participated. Mr. George Smith represented the Raytheon Manufacturing Company, builders of the equipment.

The cover photograph shows the process of hoisting the lower half of the radome to the top of the Aviation Building which houses the District Meteorological Office. After the lower half of the radome was bolted into place, the antenna pedestal was hoisted up and fastened to the platform. Next the 12-foot parabolic antenna was hoisted aloft and fastened to the antenna pedestal. Finally, the upper half of the radome was put in place. It is interesting to note that the boom on the crane was 175 feet long and that the antenna platform was about 125 feet above the ground. The modulator was hoisted by the crane and put into place through the open window in the top floor of the building, and the operating console was raised into position in the radar room by means of the regular building elevator. The radome is topped by a pair of aircraft obstruction lights and a lightning rod.

As a part of the installation, a 100-kw generator has been installed in the basement of the building to provide for standby power for the entire office which includes the National Hurricane Research Project. A repeater has been provided from the WSR-57 to the Navy's Fleet Weather Central which occupies space on the fourth floor of the same building. During the week of June 22, Mr. Joseph Bakura of the Raytheon Company and Mr. Soltow conducted detailed performance tests on the radar. These tests were followed by acceptance of the equipment by the Weather Bureau. The equipment was formally commissioned on June 26, 1959.

The District Meteorological Office, Miami, reports that there is every indication the WSR-57 will live up to our very high expectations.

Routine deliverys of additional units are expected to begin in July.

Blue Hill Records

THE complete file of weather records of the Blue Hill Meteorological Observatory, Milton, Massachusetts, has been placed on permanent loan to the United States Weather Bureau by the officials of Harvard University. The records have been transferred to the archives at the National Weather Records Center, Asheville, North Carolina, where they will be available to students of climatic change and other technical investigators. The file includes autographic and manuscript records and summaries dating back to February 1885.

The Blue Hill Meteorological Observatory has been instrumented with exemplary thoroughness during the greater part of its history. Few climatological stations in the western hemisphere have experienced such small changes of exposure over such a long period as the Blue Hill station. With the incorporation of Blue Hill into the Weather Bureau's climatological bench-mark network, the value of these records will continue to grow.

Chief Honored by Air Pioneers

ON June 19, Dr. F. W. Reichelderfer was presented a certificate of Honorary Membership in the Society of Airway Pioneers for his outstanding achievements in furnishing weather services for all flying activities.

During a banquet and ceremony jointly held by the Society of Air-

way Pioneers, the Air Mail Pioneers and the OX5 Club, the Chief was presented an honorary membership scroll by Mr. Carl F. Kusrow, the Regional Wing Director of the Society of Airway Pioneers.

After the banquet, addresses were made by Colonel Calvin A. Heath of the Army Ballistics Missile Agency of Redstone Arsenal (Alabama); by Mr. James T. Pyle, Deputy Administrator of the Federal Aviation Agency, and by Senator A. S. Monroney of Oklahoma.

The evening's program also included remarks made by Charles I. Stanton, President of the Washington Chapter of the Air Mail Pioneers, Chris M. Lample, President of the Washington Wing of the OX5 Club, and by Carl F. Kusrow, Regional Wing Director of the Society of Airway Pioneers.

About 200 pioneer flying enthusiasts, and their friends, were present at the Society's reception, banquet, and dance.

Carl F. Kusrow and F. W. Reichelderfer

WB Appropriations F. Y. 1960

THE President's Budget as submitted to the Congress in January contained a request of $48,855,000 for the Weather Bureau's Salaries and Expenses Appropriation (S&E) and $3,000,000 for the Establishment of Meteorological Facilities Appropriation (EMF). The S&E appropriation contains the annual operating funds needed for salaries, travel, communications, rents and utilities, supplies, small replacement equipment items, etc. Funds in this appropriation are available for obligation only in the fiscal year for which they are voted by the Congress. On the other hand, the EMF appropriation, which was first used in F.Y. 1956, provides funds for procurement and installation of major items of meteorological equipment. Since there is an elapsed time of anywhere from six months to 2-3 years between the time when contracts are let, and major equipments delivered and installed, funds in this appropriation are available for obligation for a number of years. For example, current costs associated with installation of the WSR-57 radars are being supported out of funds provided for this purpose in the EMF appropriation in F.Y. 1956.

WB requirements for F.Y. 1960 as presented to the Congress in the Budget consisted of the following:

Salaries and Expenses Appropriation (S&E)

Base program going into 1960 ..... $44,128,000

Increases:

A. Additional funds required to pay full year cost of programs operated only a part of F.Y. 1959 1,784,300

B. Operation and maintenance of new radar and other meteorological facilities to be installed in F.Y. 1960.... 649,400

C. Transfer of basic civil meteorological functions from the Dept. of Defense.... 1,097,500

D. Restoring and strengthening aviation weather services 1,137,600

E. Increased administrative expenses associated with above programs 58,200

$48,855,000

Establishment of Meteorological Facilities Appropriation (EMF)

The 1960 program under this appropriation is justified from zero base, i.e., one would not expect to have the same level of appropriations each year. Items for which funds were requested were:

A. Radiotheodolites (32) - to replace obsolete equipment and provide for new upper-air stations at Winslow and Charleston, W.Va.; relocation of three upper-air stations from congested airports and

two balloon inflation buildings for the two new stations $1,497,680

B. Radar - eight microwave links to improve the performance of radar sets where obstructions, such as mountains or high buildings, seriously interfere with the exposure of the antenna. The links also will permit the radarscope presentations to be made in more than one office, such as at Idlewild, LaGuardia, and Newark, in the New York area..... 394,960

C. Aviation Observing Systems - 13 sets of RVR computing and display equipment plus associated ceilometer and transmissometer instruments for use at ILS airports 520,560

D. Electronic River and Flood Gaging Equipment - The beginning of a modernization program for *Hydrologic Services* type equipment including 24 automatic river gages, 5 radar-river gages, 20 radar beacon raingages, 48 river and rainfall radio transceivers, and 4 radioactive isotope snow gages 200,200

E. Construction of living quarters at Shemya, Alaska associated with transfer of upper-air station from Navy to WB Operation 170,000

F. Engineering and technical support for staff to write specifications, make site surveys, test production models, monitor contractors, as well as install, calibrate, and check out new equipment for operation 216,800

3,000,000

Final Congressional action approved the full $48,855,000 request for Salaries and Expenses but in doing so the Congress directed the Bureau to establish new airport weather stations at Mansfield, Ohio; Alexandria, La.; Silver City, New Mexico; and Wendover, Utah. The Bureau was also instructed to pay the operating cost for the station at Huntsville, Ala., set up last year with funds provided by the Redstone Arsenal. The cost for establishing and operating these five stations will run between $250,000 and $300,000 depending on the type of station required to meet current needs at each location. Since additional funds were not provided in excess of the amount the President requested for the WB, and these stations were not in his request, it will be necessary to support the additional costs by scaling back some of the other programs of the WB.

Items for which additional funds were provided in F.Y. 1960 (see S&E summary above).

A. Full year costs. During F.Y. 1959 the high altitude aviation weather forecast program was started, radar meteorologists were hired to man about half of the new WSR-57 radars, maintenance and electronic technicians were recruited to maintain the new equipment being installed, and three planes were obtained for use on the National Hurricane Research Project with lease costs on the two commercial types being paid by the WB for only a part of the fiscal year.

A new radar meteorologist hired on April 1, for example, cost the Bureau about $1,500 in salary during F.Y. 1959. During 1960 his salary will amount to about $6,000, hence an increase of $4,500 will be required in F.Y. 1960 for this one case alone. The Budget increase of $1,784,300 is designed to meet these higher costs referred to as annualizing in 1960 those programs begun during 1959.

B. Operation of new equipment. This item includes provision for 80 new radar meteorologists for WSR-57 stations and 20 new positions distributed between electronic technicians, maintenance men in Regional offices and supporting staff. Also, included are funds for higher electricity bills, additional supply parts for new electronic equipment, funds for higher cost of 1680-mc radiosondes vs. 403's now used by SCR-658 equipment, etc.

C. Transfer of basic meteorological functions from Department of Defense - Provides for WB paying basic long-line inter-city mileage charge on national facsimile circuits and operation of upper-air station at Shemya. Also included is reimbursement to MATS for flying WB personnel and freight to Arctic bases and to Johnston Island in the Pacific.

D. Restoring and Strengthening Aviation Weather Services - Several program areas are involved under this heading; briefly,

1. 24-hour service a day at 13 airport stations - Atlantic City; Bridgeport, Conn.; Bristol, Tenn.; Burlington, Iowa; Erie, Pa.; Key West, Fla.; Meridian, Miss.; Muskegon, Mich.; Spartanburg, S. C.; Waterloo, Iowa; Williamsport, Pa.; Wilmington, N.C.; and Worcester, Mass.

2. Addition of one employee to each of 27 airport stations now operating 24 hours a day where staff reductions were made during F.Y. 1958.

3. Implementation of Flash Advisory Warnings from FAWS Centers on an operational basis. Provision is made for bringing FAWS forecasting staffs up to a standard of ten at each office, so that two forecasters can be on duty at all times, for the installation of some 50 aviation automatic telephone answering devices, for about 50 teletypewriter drops on airline circuits for receipt of PIREPS, for some 30 new facsimile installations and for nearly 100 tel-autograph installations.

4. Broadcasts over FAA L/MF ranges. One additional employee will be added at each of 54 of the offices participating in the L/MF continuous broadcast program. FAWS offices will not receive added staff support above that provided for the Flash Advisory program and a number of WB offices will furnish broadcast materials for two L/MF range broadcasts to bring the total to 88 L/MF ranges.

Also included in the final bill was $2,500,000 out of the

$3,000,000 requested for Establishment of Meteorological Facilities. It is expected that the reduction will be applied largely to the purchase of runway visual range equipment.

In summary, the F.Y. 1960 appropriations provide for hiring slightly over 300 new employees, nearly all in the field service, and for purchase of $2,500,000 worth of new meteorological equipment.

ICAO P. I. A. Panel Meets

Left to right—R. Clinkscales, FAA; A. Brunstein, WB; G. Sink, FAA; G. Gatlin, ATA.

THE ICAO P.I.A. Panel (Panel for Coordinating Procedures Respecting the Supply of Information for Air Operations) held its first Meeting at ICAO headquarters in Montreal, Canada, from May 25 to June 5, 1959.

Mr. Alan Brunstein, Aviation Section, F&SR Division, was a member of the six-man U. S. Delegation to the Meeting. Mr. William Halnon, CAB, the head of the U. S. Delegation was elected Chairman of the Panel Meeting at its first session. Other members of the U. S. Delegation were Mr. G. Sink, FAA, Mr. G. Gatlin, ATA, Mr. W. Broomall, AIRINC, and Mr. R. Clinkscales, FAA.

In addition to representation from the U.S., Panel Members from the following countries and international organizations were in attendance: Canada, France, Germany, Ireland, Italy, Netherlands, Sweden, United Kingdom, IATA, IFALPA, and the WMO (Mr. A. H. Nagle, USWB).

The P.I.A. Panel was formed as an outgrowth of the work of the ICAO Third Air Navigation Conference (1956) in its consideration of an analysis of the concept of

operational control. In general terms, the task of the Panel was to develop a world-wide system of in-flight meteorological service to aircraft.

The Panel first determined the categories of information required by aircraft in flight and then drew up suggested procedures for transmitting the information to these aircraft. The next step was to make a preliminary assessment of the implications of the application of these procedures on the various services (communications, meteorology, etc.). The remaining task of the Panel was to recommend amendments to the relevant ICAO documents.

The suggestions of the Panel are being forwarded to the ICAO Air Navigation Commission with the recommendation that they be referred to the appropriate bodies of ICAO for review. It is anticipated that the material will first be referred to the 5th Session of the ICAO MET Division which meets simultaneously in September 1959, with the Commission for Aeronautical Meteorology of the WMO, for consideration in connection with the treatment of relevant items on the agenda for those simultaneous sessions.

In brief, the Panel agreed on: a revision of the definition of SIGMET* information; procedures to transmit SIGMET, selected special reports, amended aerodrome forecasts, and upper winds and temperature information to aircraft in flight. While a preliminary assessment of the impact of these procedures on the various services was attempted by the Panel, it was recognized that a complete assessment was largely a matter for determination by individual States, based upon existing facilities and services and the extent to which they have previously implemented area meteorological watch procedures.

*SIGMET is similar to the type of information contained in the domestic "Flash Advisory," e.g., active thunderstorm area, heavy hail, severe icing, etc.

Briefs from the CO Friday Staff Conferences

Field Interest in Advances in Weather Forecasting. Members of the recent Advanced Study Group attended the regular Friday afternoon staff conference on May 22 and among the subjects in which they expressed particular interest were the prospects for results from research in weather forecasting. Special interest was expressed in quantitative precipitation forecasting and much emphasis was placed upon the present handicaps felt by MIC's and field station personnel in their attempts to satisfy public interest in amounts of precipitation to be expected. Subsequent discussion brought out information that the number and scope of research projects in this field during recent years is much larger than is commonly known among field personnel. Progress has been encouraging but not very tangible up to the present time. References were made to several specific studies by Weather Bureau research meteorologists and by researchers in other organizations and in other countries. References to these studies can be found in current bibliographies.

In a recent staff conference, Dr. Smagorinsky reviewed the objectives of the General Circulation Research Section and summarized by chart the status of his research program. He also outlined the plans for use of the new electronic computer known as the STRETCH machine which will be about 100 times faster than the present 704. Staff members fully recognize that the "end product" in forecasting which reaches the public for practical use will always depend primarily upon the personal knowledge and capabilities of the forecaster's judgment and interpretations. Dr. Smagorinsky's review high-lighted the prospects for future developments in numerical weather prediction and in particular the possibilities for better quantitative precipitation forecasts through further use of computer methods. Status and plans for general circulation research and for development of numerical weather prediction will be reported in a future issue of TOPICS. Reviews have been published from time to time in the scientific literature.

Discomfort Index. The daily press in many cities, particularly in the eastern part of the country, made a great play on public reaction to the publication of data for the temperature-humidity index under the title "Discomfort Index", along with daily weather reports and forecasts. In view of the fact that many of the articles in the press wrote the story along jocular lines that did not bring out clearly the views of the Bureau, the following brief comments are offered. The term "Discomfort Index" has been used for several years primarily by air conditioning engineers as a means of measuring the "load" their equipment is required to carry. In this sense the term is more or less the converse of the "Degree Days" used so extensively by heating engineers in the winter time. From the beginning it was recognized that some people might find objection to the use of the term because of wide individual differences in personal feelings of discomfort during high humidity and because of the rather subjective nature of the index. However, the figure has many practical uses including its use as a warning that persons susceptible to heart attack should not engage in too great physical exertion on days when the "Discomfort Index" is high. The

Weather Bureau holds its original position that the index should be available for publication wherever desired and makes no objection to continued use of the term "Discomfort Index" in localities where the public prefers this term and where there is no serious reaction against its use. Those localities where use of the term is felt by many people to add to the prevailing sense of "discomfort" from high humidity are at liberty to call it what they prefer. For the most part the Bureau advises use of the term "Temperature-Humidity Index" since this permits stations to report these two elements as factual weather data and does not intrude into the more subjective fields of medical advice and physiological complications!

Appropriations, Field Programs, etc. In the weekly staff conferences the many questions and problems on appropriations, allotments and balances, on field programs, staffing shortages, and related planning matters receive more attention than any other individual subjects. For the Fiscal Year beginning July 1, 1959 (F.Y. 1960) the President's Budget published in January 1959 recommended $48,855,000 for Salaries and Expenses and $3,000,000 for Establishment of Meteorological Facilities.

Passed by House of Representatives:	$47,355,000 for S&E
May 28, 1959	$ 2,500,000 for EMF
Passed by Senate:	$48,855,000 for S&E
June 18, 1959	$ 2,500,000 for EMF
Final bill passed by both Houses	$48,855,000 for S&E
July 1, 1959	$ 2,500,000 for EMF

(S&E refers to Salaries and Expenses, that is, funds for all regular operating expenses. "EMF" refers to funds for equipment such as radars, radiotheodolites, ceilometers, etc.)

For a discussion of items covered in the 1960 Budget see separate article in this issue.

NOTE: The amounts given above do not represent the total of recommendations presented by the Bureau for the 1960 F.Y. Budget. It has been called to our attention that employees in the field have at times concluded that the Bureau failed to obtain funds for certain urgent deficiencies because it did not make request for funds. The original estimates submitted by the Bureau are administratively restricted as they are in the cases of all Federal bureaus but employees may be assured that the Central Office always requests funds to correct serious staff shortages and other urgent items; in fact, the Bureau strongly urges these items at every step of the budgetary process. They are lost in the process during unavoidable "pruning" and coordination by budgetary authorities who are forced to keep the total Federal expenditures within some limits.

Attention is invited to TOPICS for August 1952, page 116 and December 1954, page 107 which describe the budgetary process step by step. This process has now become practically a year-round activity and the staff of the Budget Office works very long and hard to develop justifications and present the strongest possible appeal. A major portion of the time and efforts of the Assistant Chief for Administration and the Chief of Bureau are devoted to urging approval of these budget recommendations at the various stages through which they must pass. The Central Office has been successful in convincing the Bureau of the Budget and the Congress of the urgent requirements for meteorological services by the Bureau, but the House hearings show that much doubt has been cast on the requirements because of views expressed by special investigators after interviews with our field employees. The Central Office needs the understanding and cooperation of field employees in presenting the facts regarding such matters in their true context and perspective.

VIP Visits to Field Stations. Increasing numbers of government officials and other distinguished persons are expressing interest in visiting offices of the Weather Bureau. In subsequent issues of TOPICS suggestions will be offered based on reports and experiences of some of the recent visitors. With crowded schedules and heavy workloads there often are problems in giving the time and attention expected by visitors. The suggestions will be offered as aids in organizing such visits to give satisfaction to the visitor without interfering more than necessary with essential scheduled work.

Question Box

Raob Balloon Ascension Rate

Question— Is there an explanation for the apparent increase in ascension rate of a raob balloon at high altitudes?

Answer—Balloons are not fully distended when inflated and although pearshaped, the lower portion increases the drag rather than streamlining or improving the aerodynamic characteristics. The top flattens during the ascent to further reduce the ascensional rate at levels below the tropopause.

The effect of these conditions is greatly reduced or eliminated above the tropopause. As the film approaches its elastic limit, the balloon assumes a spherical shape, thereby reducing the air resistance and increasing the ascensional rate.

Low Cost Electronic Computer in CO

IN May 1959, the Weather Bureau acquired a medium scale electronic digital computer, the Bendix G-15, for the solution of computational problems intermediate in difficulty between those appropriate for the ordinary desk calculator and those suited for the larger computing machines such as the IBM 704. The G-15 computer, shown in the accompanying photograph, consists basically of a computing unit, about the size of an 11 cu. ft. refrigerator, and an electric typewriter. Cost of this basic unit is $50,000, but the computer, together with certain peripheral equipment, is being rented by the Bureau for $1700 per month. Auxiliary equipment included in the rental is a Friden Flexowriter, by means of which input tape can be prepared independently of the computing unit, and an IBM card input machine.

A highly desirable feature of the G-15, in addition to its small size, is ease of programming. This feature is accomplished by means of the "Intercom 1000" programming system, in which a number of internal operations are performed in response to a single overt command. In this way much programming time is saved, for the programmer needs to be familiar only with a list of some forty commands. For example, to write an instruction, the user need only specify the desired code, represented by two digits, together with the four-digit memory address in which he has previously stored the data on which he wishes to operate. The portion of an Intercom program shown below illustrates the simplicity of problem preparation for the G-15. The program is for the calculation of $\frac{a^2 - bc}{d}$ where a, b, c and d are stored in memory positions 1100, 1101, 1102, and 1103, respectively. Each operation is performed on the contents of an arithmetic register called the accumulator.

NOTES	Command Code	Memory Code
Clear accumulator and add b	42	1101
Multiply b, in accumulator, by c	44	1102
Store bc	49	1104
Clear accumulator and add a	42	1100
Multiply a, in accumulator, by a	44	1100
Subtract bc from a^2	41	1104
Divide a^2 — bc, in accumulator, by d	48	1103

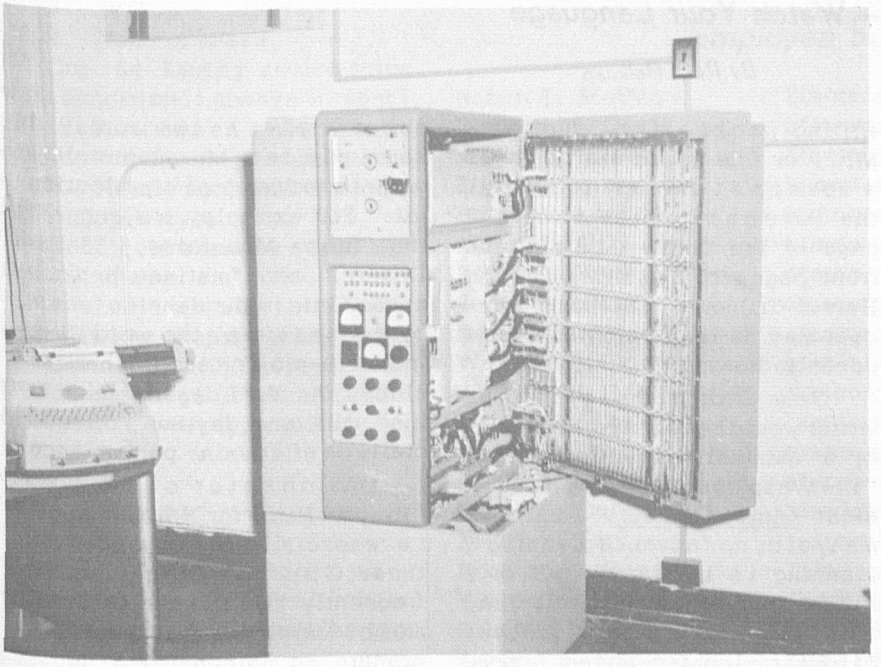
Subroutines to calculate trigonometric, logarithmic, exponential, and other functions are integral parts of the Intercom programming system and may be automatically inserted in any selected portion of the memory.

In addition to Intercom 1000, a basic programming system is also available for users who want to exercise control over every internal operation performed by the machine.

Although the operations of the G-15 are performed much more slowly than similar operations by the IBM 704, the machine with Intercom programming is many faster than a desk calculator. For example, the G-15 requires an average of 15 milliseconds to perform an addition, and about 32 milliseconds to complete a multiplication or a division.

Input to the G-15 computer may be accomplished directly from the electric typewriter, by means of tape previously prepared on the Flexowriter or on the computer itself, or by means of the IBM card input machine.

During the few weeks it has been in use at the Central Office, the G-15 has elicited an enthusiastic response from research personnel, who have tested its performance with a variety of computational problems. The machine has been used to verify 500-mb height forecasts, to compare time series, and to make calculations associated with an objective forecast procedure, with storm-surge work, the construction of atmospheric cross-sections, and quantitative precipitation forecasting. Programming is under way for the solution of a potential evapotranspiration equation and for the computation of hurricane motion by means of trajectory and differential-heat-advection techniques. Most of the work so far has been of an exploratory nature, designed to familiarize personnel with the operation of the computer and to determine its capabilities and limitations. Indications are



that the G-15 computer, though not comparable with the more costly electronic computing machines either in speed or in the capacity to process large amounts of data, will nevertheless prove economical in dealing with many computational problems too lengthy for the desk calculator but not sufficiently long to justify the complex programming procedures required by the larger computer.

Selections for 1959 Agricultural Meteorology Institute

FOR the fourth consecutive year, the Weather Bureau and the University of Maryland are jointly conducting a seven-week Agricultural Meteorology Institute. This year's institute will be from June 29 to August 14 and the applicants selected for attendance are the following:

Region I
Charles B. Carney, MIC,
WBAS Raleigh, N. C.
J. F. Feeley,
WBAS Buffalo, N. Y.
John Purvis, MIC,
WBAS Columbia, S. C.

Region II
Paul Mott,
WBO Lakeland, Fla.
H. S. Carter, MIC,
WBAS Athens, Ga.
A. C. Webb,
WBAS Brownsville, Tex.
D. W. Krueger,
Fire-Weather Office, Macon, Ga.
R. L. Mayne,
WBAS Amarillo, Tex.

Region III
Ceel Van Den Brink,
WBAS Des Moines, Ia.
R. C. Baskin,
DMO Kansas City, Mo.
Ellis D. Pike,
WBAS Wichita, Kans.
Ernest B. Williams,
WBAS Benton Harbor, Mich.
W. L. Denmark,
WBAS St. Louis, Mo.

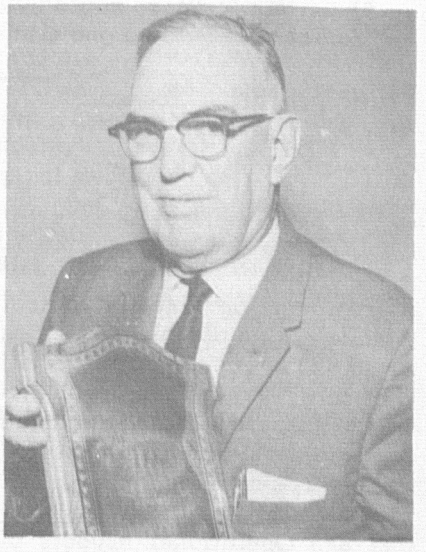
Region IV
Leland D. Wilkins,
WBO Pomona, Calif.
Gilbert L. Sternes,
WBSC Portland, Ore.
Ray Randall, MIC,
WBAS Bakersfield, Ore.

Hydro Field Personnel
Donald Close,
RFU, Knoxville, Tenn.

Central Office Personnel
Melvin A. Johnson,
NMC, NAWAC
Curtis W. Crockett,
NMC, Extended Forecasts Section
E. J. Saltsman,
Office of Climatology
A. Delbert Peterson,
Office of Climatology
J. A. Wallace,
Office of Climatology
Elmer R. Nelson,
Hydrologic Services Division
Earnest A. Rodney,
F&SR Division
Clarence L. Kibler,
F&SR Division

Hardy— Civil Servant of Year

ERLE L. HARDY, Regional Administrative Officer, Fort Worth, Texas was named Civil Servant of the Year for 1959. J. A. Gooch, Fort Worth Chamber of Commerce president, presented Mr. Hardy with a plaque during a Federal Business Association luncheon. Mayor Mc Cann gave Hardy a proclamation designating Tuesday as "Erle Hardy Day" and presented him with a City of Fort Worth distinguished service award certificate. (For a resume of Mr. Hardy's career see May 1952 TOPICS.)



Courtesy of Fort Worth Star-Telegram

Book Review——Watch Your Language

By R. L. Belknap

THIS is good advice—whether you are telling a story in mixed company, or writing a forecast. Watch Your Language[1] is also an interesting book on word usage, sentence structure, sinful syntax—for those who would write in readable and understandable fashion.

Theodore M. Bernstein, Assistant to the Managing Editor, New York Times, has, over the years, collected from the pages of the Times examples of good writing and blunders. He has incorporated these into "Winners and Sinners" which he describes as "a bulletin of second guessing issued occasionally from the southeast corner of the New York Times News Room." Sinners are boners, redundancies and confused writings, while "winners" obviously are examples of good writing. Material in the book is derived from these bulletins.

Watch Your Language is most directly useful to reporters and copy editors; but weather forecasters have many of the same writing problems. When the MIC, or one of his staff, writes a forecast for New York City, the forecast makes the front page of the Times—and also the front pages of the News and the Herald-Tribune. The same forecast may be read verbatim over a dozen radio and TV stations.

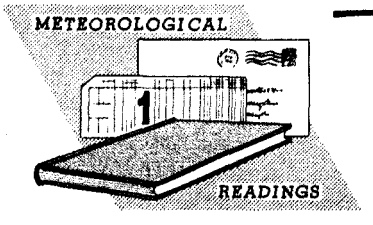
One error made by a Times writer would never have been made by a Weather Bureau forecaster: "The Wasp ... is limping home at eight knots an hour." But how many of us do "advance planning"? Planning is the laying out of a future course; advance planning then would be a curious process of forward-looking-ahead. Do we use that lawyer's monstrosity, "And/Or"? Why not say, "----- or -----, or both"?

"RAVISHING. 'Elm Beetle Infestation Ravishing Thousands of Trees in Greenwich.' Insex? Keep your mind on your work, buster. The word you want is 'ravaging'." Awhile; sometime; underwater; under way; all right; cannot: should these be written as one word or as two words? In some places Mr. Bernstein is perhaps too much of a perfectionist. For example, he suggests that "Sierra Mountains," "Sahara Desert," and "matinee performances" are redundancies since, by definition, the word Sierra includes mountain; Sahara includes the word desert; and matinee means a daytime, or especially an afternoon, performance.

One chapter of the book, "Helpful Hints for Hatchet Men," is especially recommended for those Central Office men who frequently rewrite the letters, memos and papers that some of us prepare so painfully but oh, so proudly.

This book will not help meteorologists make better forecasts but it might help us write more understandable—and hence potentially more useful—forecasts. Even though it may not help you write the perfectly worded[2] forecast, it will give you entertaining and informative reading.

[1]WATCH YOUR LANGUAGE, Theodore M. Bernstein, Channel Press, Great Neck, New York, 1958.
[2]A perfect forecast would be one that verified in all details; a "perfectly worded forecast" would be one that verified no matter what the weather.



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXVII: Physical and Operational Aspects of Aircraft Icing by Lewis A. Rodert, on pages 1190 through 1196 of the Compendium of Meteorology.

About the Assignment: Icing is one of the major headaches of aviation. Its likelihood always deserves careful consideration. This is especially true when the icing season has apparently ended or is just about to begin because icing can be most treacherous when least expected. This assignment reveals some important facts about an unrelenting enemy.

QUESTIONNAIRE

Col. 61 Which of the following methods of removing or preventing ice formation promises to be the simplest and least expensive?

1. Chemical
2. Thermal
3. Atomic
4. Mechanical

Col. 62 What is the chief physical phenomenon which accompanies the "change of state" during aircraft icing?

1. Heat energy liberation
2. Heat energy absorption
3. Cooling
4. Evaporation

Col. 63 Below what temperature can liquid water no longer remain in the air?

1. 33°F

2. 25°F
3. 20°F
4. None of these

Col. 64 During severe icing what condition is always present?

1. Abundant uncondensed moisture at freezing temperatures
2. Nearly saturated unstable air at flight level
3. Liquid moisture visible to the naked eye
4. Large amounts of water vapor at low temperatures

Col. 65 During icing conditions what range of cloud droplet diameter is most typical?

1. 1 - 4 μ
2. 4 - 8 μ
3. 8 - 20 μ
4. 20 - 30 μ

Col. 66 For aircraft icing considerations, what calibration range of air temperature indicators is most important?

1. 36° to 38°F
2. 33° to 38°F
3. 31° to 33°F
4. 20° to 26°F

Col. 67 Which of the following is the rate of aircraft icing dependent upon?

1. Size of water droplets
2. Liquid water content of the cloud
3. Relative humidity
4. All of these

Col. 68 What increase in drag has been observed in operational icing conditions?

1. 5 percent
2. 10 percent
3. 35 percent
4. No increase

Col. 69 Where is airfoil icing most dangerous?

1. On the leading edge
2. 5 percent from leading edge on upper surface
3. 5 percent from leading edge on lower surface
4. It makes no difference

Col. 70 What is the greatest aircraft operational hazard due to frost?

1. Instrumental failure
2. Radio interference
3. Increased drag
4. Carburetor icing

Employee Suggestion Box

Robert J. McCann	Electronic Tech.	San Juan
Richard M. Davis	Meteorological Tech.	NWRC Asheville
Wayne A. McDaniel	Meteorologist	Peoria
Ella K. Niederkorn	Secretary	Cincinnati
Elden V. Jetton	Meteorologist	El Paso
Arnold L. Sugg	Meteorologist	Miami
Raymond C. Wanta	Meteorologist	Central Office
Robert B. Orton	Meteorologist	Amarillo
Guy C. Anderson	Meteorologist	Wilmington, Del.
Wallace R. Donaldson	Meteorologist	Seattle
William H. Metivier, Jr.	Meteorological Aid	NAWAC
Daniel W. Krueger	Meteorologist	Macon
Walter J. Gully	Personnel Officer	RAO Salt Lake City
Charles H. Shoemaker	Meteorologist	Allentown
James F. Cornell	Meteorological Tech.	Corpus Christi
LeRoy S. Farr	Instrument Maker	Central Office
Dorothy F. Hensley	Tabulator Operator	NWRC Asheville
Wilmer R. Harrell	Clerk	WRPC Chattanooga
Robert H. Courtney	Statistical Draftsman	NWRC Asheville
Vincent E. Hagarty	Tab. Pro. Planner	NWRC Asheville
Marvin H. Hofer	Meteorologist	Oakland
Ralph S. Jones	Meteorologist	Albuquerque
John A. Mikina	Meteorologist	Detroit
Leland D. Wilkins	Meteorologist	Pomona
George C. Williams	Meteorologist	Chicago
Allen B. Elam, Jr.	Meteorologist	NWRC Asheville
Robert L. Bolin	Meteorologist	Milwaukee
Richard J. Smith	Meteorologist	Newark
Max M. Feinsilber	Meteorological Aid	NAWAC
Donald W. Doran	Meteorological Tech.	AWP Boston
George B. Kornbrust	Meteorologist	Bishop
Lawrence C. Pierce	Meteorologist	Harrisburg
Gilbert R. Wright	Instr. Main. Analyst	Central Office
Henry F. Meyer	Meteorological Tech.	Los Angeles
Irving Zellon	Meteorologist	Atlantic City
Sylvia Shapiro	Mail & File Clerk	RAO New York
Milton O. Swenson	Fiscal Supervisor	RAO Salt Lake City
Harold E. Lami	Meteorologist	Mobile
Mary L. Wollensack	Clerk-Stenographer	Denver
William L. Exley	Meteorological Tech.	Koror
Raymond O. McSwain	File Clerk	NWRC Asheville
Charles V. Cunniff	Observer in Charge	Milton
Frank L. Penland	Tab. Machine Ope.	NWRC Asheville
Elizabeth J. Weiss	Publications Editor	Central Office
Herbert A. Petrow	Substation Observer	Ione, N. M.
Joseph R. Glantz	Meteorologist	WRPC San Fran.
Stanley J. Krowka	Meteorologist	WBAS New York
Allen F. Flanders	Hydrologist	RFC Cincinnati
James E. Rawles	Meteorologist	Winslow
Robert K. Fankhauser	Meteorologist	Winslow
Robert E. Corbin	Meteorologist	Winslow
Clarence A. Woollum	Meteorologist	WBAS Washington
Milton J. Fayne	Meteorologist	WBO New York
Ben E. Trapani	Meteorologist	Bridgeport

"Rage" Words

THE following list of current "rage" words and appropriate meanings appeared in the April issue of "CURRENT" NEWS, a house organ of the Salt River Valley Water Users' Association of Arizona. Reproduction of the material is permissible.

Under Consideration — Never heard of it.

Under Active Consideration—We're looking in the files for it.

A Meeting—A mass mulling of master minds.

A Conference—A place where conversation is substituted for dreariness of labor and the loneliness of thought.

To Negotiate—To seek a meeting of minds without the knocking together of heads.

Re-orientation—Getting used to working again.

Reliable Source—The guy who told the guy you just met.

Unimpeachable Source — The guy who started the rumor originally.

A Clarification—To fill in the background with so many details that the foreground goes underground.

We Are Making A Survey—We need more time to think of an answer.

Note and Initial—Let's spread the responsibility for this.

See Me, or Let's Discuss—Come down to my office, I'm lonesome.

Let's Get Together on This—I'm assuming you're as confused as I am.

Give Us The Benefit of Your Present Thinking—We'll listen to what you have to say as long as it doesn't interfere with what we've decided already.

You Spearhead The Issue—You be the goat.

Point Us The Issue—To expand one page to 15 pages.

The Issue Is Closed—I'm tired of the whole affair.

A Camel—A horse designed by a committee.

A Program—Any assignment that can't be completed in one phone call.

To Expedite—To confound confusion with commotion.

Channels—The trail left by inter-office memos.

Coordinator—The guy who has a desk between two expeditors.

Consultant (Or Expert)—Any ordinary guy more than 50 miles from home.

To Activate—To make carbons and add more names to the memo.

To Implement A Program—Hire more people and expand the office.

Forecasters' Forum

Skill-less Forecasts

R. B. Meyer, WBAS Los Angeles defends himself and fellow forecasters who are remembered for the one miss and forgotten for the nine hits. Like the mighty Casey, we are remembered for the one time that we "struck out."

Dear Sir:

There was a "heavy mist" during the Rose Bowl game January 1, 1955 as Mr. Peterson writes in the April 1959 Forecasters' Forum. In fact, an estimated half inch of rain had fallen in the Bowl by the end of the game. And it doesn't take much more than a half inch to qualify as a BIG STORM in Los Angeles.

However, I don't feel that Weather Previews, weather forecasts, or weather observations for that matter have to be right every single time to be valuable as Mr. Peterson seems to imply.

His comments do emphasize how easy it is to remember the year rain spoiled the Rose Bowl game and to forget the nine years when the weather was fair. One of the benefits from the Weather Preview would be the correcting of mistaken ideas that many people have about their chances of enjoying favorable weather on some important day which is beyond the range of skilled forecasts.

R. B. Meyer
WBAS
Los Angeles

Length of Service Awards

15-Year Awards

Central Office & Overseas
- Vernon D. Alexander
- Harry E. Brown
- Raymond G. Busnewski
- Martha W. Cournoyer
- Joseph E. Fimiani
- Dominic Guarcello
- Alma R. Heinly
- David M. Hershfield
- Rosalind R. Hill
- Edith L. Horner
- Ralph P. James
- Annie M. Johnson
- William D. Lyons
- William H. Metivier, Jr.
- Harold J. Monroe, Jr.
- Constance E. Mottaz
- Kenneth M. Nagler
- Marie K. O'Neill
- Julian W. Posey
- Anna May Rudisill
- Loyal P. Stark
- Charles C. Uhl
- David Q. Wark
- Roy E. Wyett

Chicago, Ill. WBFC
- George W. Polensky

Charleston, S. C. WBAS
- Peter George Putz

NEW MIC'S

Charlotte, N. C.

PAUL J. BOWERS, of WBAS Raleigh, N. C., has been selected to fill the MIC vacancy at WBAS Charlotte, N.C., occasioned by the death of James Howe.

Mr. Bowers is 45, was born in Lee County, N. C. March 13, 1914. He attended Guilford Col-

lege, N. C. where he received a B. S. degree in 1936, with a major in physics and a mathematics minor. In 1943, he acquired 28 hours of meteorology and climatology at M.I.T., after having acquired 4 hours of meteorology from University of Tennessee in 1941.

Mr. Bowers began his Weather Bureau service on August 4, 1938 at Airport Station Charlotte, N.C. On April 8, 1940, he was reassigned to the Flight Advisory Weather Service Unit at Atlanta, Georgia, where he remained until February 14, 1954, when he was transferred to WBO Raleigh, N.C. On May 23, 1954, he was again reassigned to WBAS Raleigh, N.C.

Moline, Illinois

WILLIAM A. JOERN, Principal Assistant at Moline, has been selected to fill the MIC vacancy at that station occasioned by the retirement of Mr. L. Walter Dick.

Mr. Joern is 54, began his Weather Bureau service on January 26, 1942, at Seattle and in 1947 he was transferred to Moline as Official in Charge. When the Davenport station was closed in 1953 and activities consolidated at Moline, Mr. Joern was made Principal Assistant.

RETIREMENTS

Mary Cribbin

MARY A. CRIBBIN, Voucher Examiner in the Fiscal Section of the Central Office, retired June 30 after more than 32 years of government service.

Born in New York City, Miss Cribbin moved to Washington with her family at an early age. She attended elementary, high school, and business school at Notre Dame Academy in Washington. Her government service dates back to 1919 when she was employed by the U. S. Shipping Board. Other prior Federal Service includes the Post Office Department, War Department, Bureau of Census, Bureau of Foreign and Domestic Commerce, Bureau of Naturalization and Immigration, Agricultural Administration, and the Railroad Retirement Board. In March 1942 she came to the Weather Bureau, serving in various assignments in the Fiscal Section until her retirement.

Miss Cribbin has given generously of her time and talents, displaying unusual skill, extraordinary attention to detail, and a high degree of resourcefulness in discharging her responsibilities, and her absence will be keenly felt in the Fiscal Section. She will maintain her home in Washington for the present but plans to move to Florida within the next few years. Her current mailing address is 4814 Sargent Road, N.E., Washington 17, D.C.

Ralph T. Hanna

RALPH T. HANNA, Western Fire-Weather Coordinator, San Francisco, retired June 30 after nearly 31 years of Weather Bureau service.

A native of Kansas, Mr. Hanna graduated from Winfield, Kansas High School and received his A.B. degree at the University of Kansas in 1927. He entered the Bureau on September 17, 1928, as a Junior Observer under the late "Frosty" Flora at Topeka. Just a year later he transferred to Boise where he was introduced to fire-weather service. From 1931 to 1936 he supervised the fire-weather activities for the Boise district, and from 1936 to 1941 he served in a similar capacity for the Missoula district. Mr. Hanna spent a year as MIC at Missoula and a year as Regional Liaison Officer at Seattle before his selection as Western Fire-Weather Coordinator in 1943. Bringing to this project the benefit of many years managerial and specialized forecast experience, he has conducted a highly successful program for the California fire-weather district, as well as being responsible for the coordination of fire-weather activities for Nevada, Oregon, Washington, Idaho, Montana, and Western Wyoming.

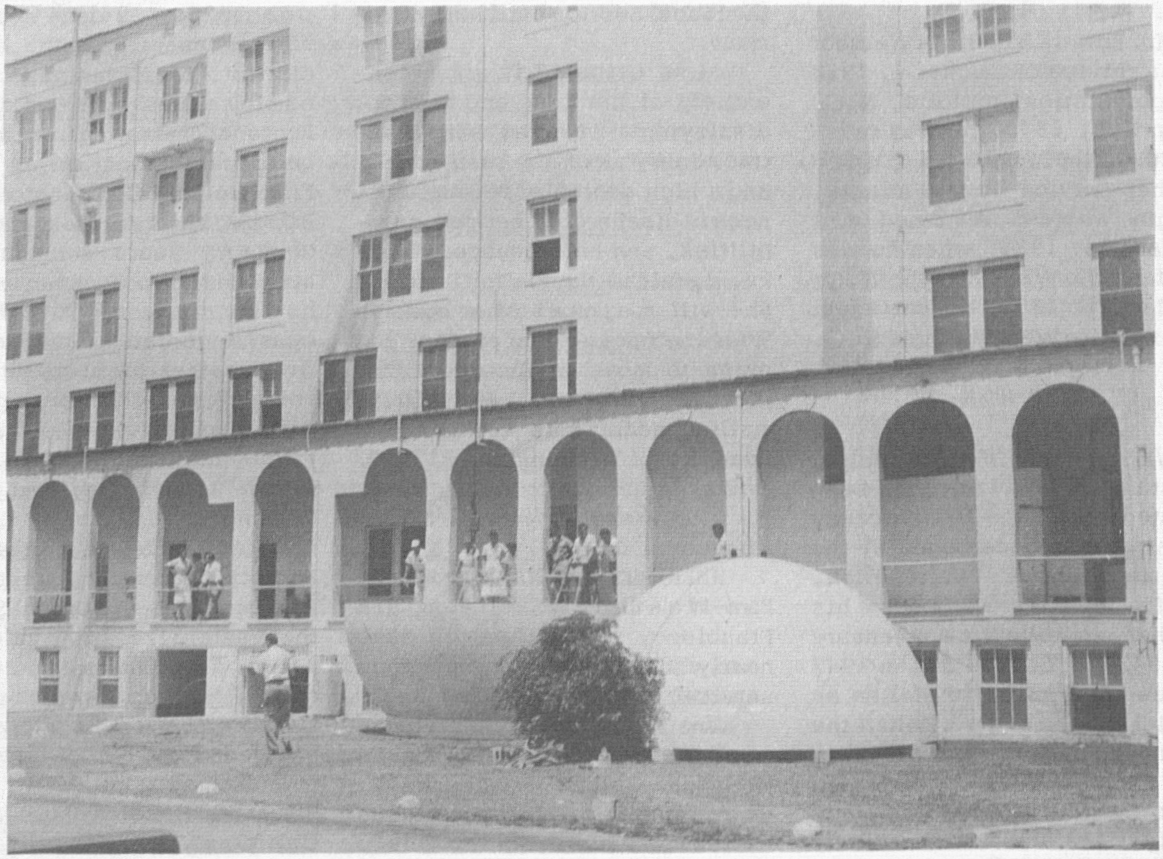
Mr. Hanna is a member of the Society of American Foresters, the American Meteorological Society, the Western Forestry and Conservation Association, and the Forestry Research Committee of California. He hasn't revealed his plans for after retirement, but friends may continue to contact him at 550 Hazel Avenue, Millbrae, California.

Floyd D. Young

FLOYD D. YOUNG, Western Special Projects Director at Los Angeles when he retired in April 1956, died June 16 in La Jolla, California at the age of 69. (See June 1956 TOPICS for a full account of his career.)

During his more than 46 years of service with the Bureau, Mr. Young served in many important assignments, including seven years as Regional Director at Los Angeles. His name will always be intimately connected with the fruit-frost and fire-weather services, an area in which he served with distinction for nearly 40 years.

Mr. Young's widow lives at 5185 Shore Drive, Carlsbad, California.



Upper and lower half of WSR-57
radar dome before hoisting.

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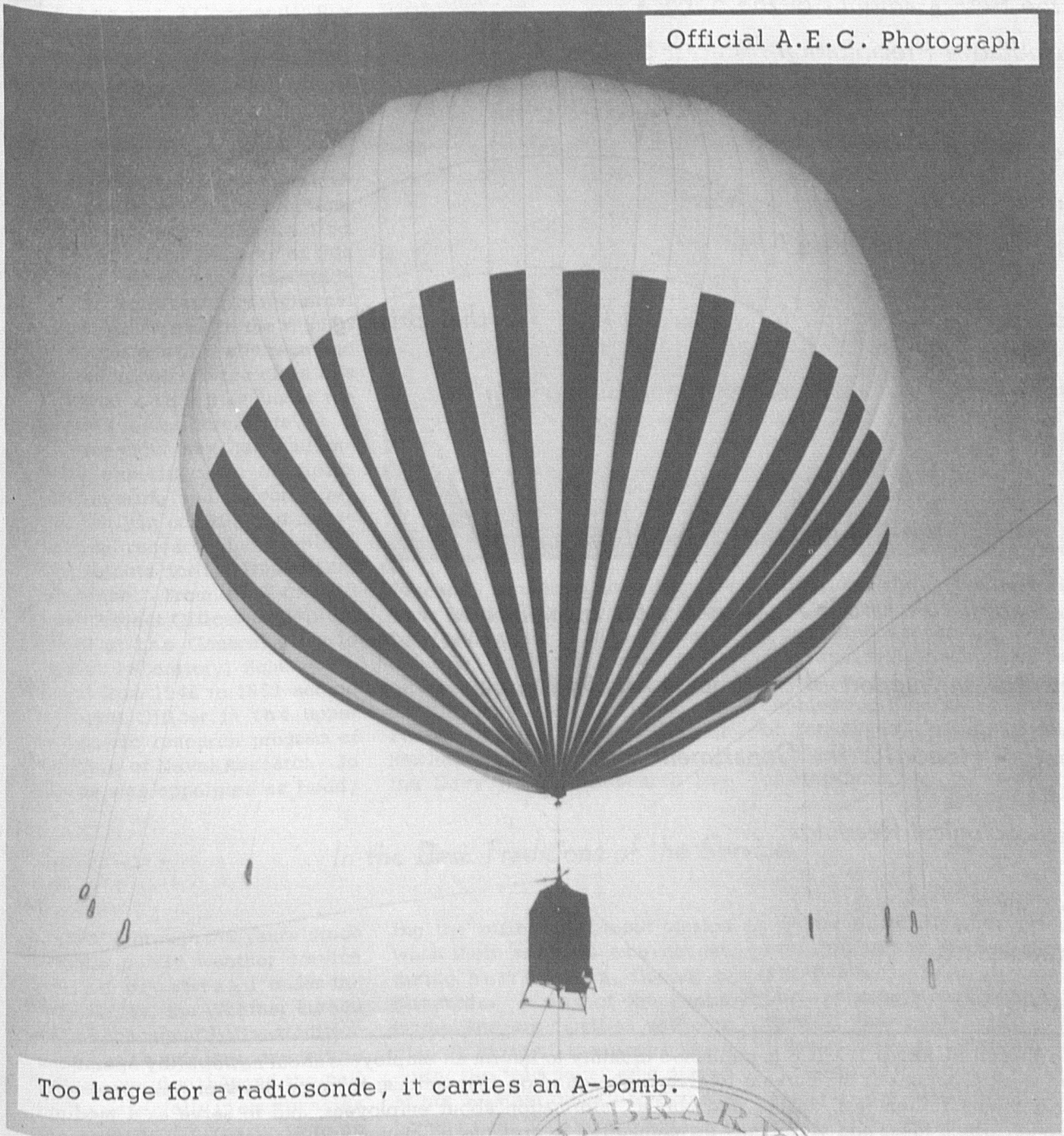

Too large for a radiosonde, it carries an A-bomb.

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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.

ASSISTANT CHIEF FOR DEVELOPMENT OF TECHNICAL SERVICES

Commander Daniel F. Rex

ON August 3 Commander Rex joined the Weather Bureau on a part-time basis to serve as Assistant Chief for Development of Technical Services. In this capacity Commander Rex will concentrate on the adaptation of new applications of meteorological research and theory to the practical techniques of weather forecasting. The development aspects of this office are in contrast to the guidance and coordination of technical services activities in the regular field operations of the Bureau and in the technical service divisions which will continue under the Deputy Chief as heretofore.

Commander Rex has had extensive experience in the fields of engineering and meteorology, particularly in carrying out meteorological research and development projects for the Department of Defense. From 1946 to 1948 he was Project Officer for Project CIRRUS at the General Electric Research Laboratory, Schenectady, and from 1948 to 1951 served as Project Officer in the upper atmospheric research program of the Office of Naval Research. In 1951 he was appointed as Head, Research, Development and Equipment Section, Naval Weather Service Division, and in 1954 was assigned as Senior Naval Meteorologist with the Task Force conducting nuclear tests in the Pacific. Since 1958 Commander Rex has been Officer in Charge of the Navy Weather Research Facility (formerly AROWA) at Norfolk.

Commander Rex has a BS degree in electrical engineering from Massachusetts Institute of Technology, an MS degree in electrical engineering from the University of Tennessee, and a PhD degree in meteorology from the University of Stockholm.

In the Best Traditions of the Service

DOWN through the years since the public weather service was first organized under the Signal Corps, the Weather Bureau has had an unusually fine tradition of devotion to duty and extraordinary service beyond the call of duty, especially in emergencies when life and property were in danger. It has been and fortunately still is common for weathermen to work long hours during storm emergencies, sometimes 24 to 48 hours and even more without leaving the office or outpost station when their services are needed during hurricanes, floods, or blizzards. Most of the senior employees are familiar with the classic story of the employee during the "old days" who stayed at his weather observing and reporting post for days during a ravaging epidemic that struck down thousands of people and finally passed out at the telegraph key while transmitting his weather report.

The Bureau takes pride in recognizing and making appropriate awards to employees who perform exceptional services in time of emergency, risking their lives at times to carry out duties contributing to public welfare and safety. The sense of responsibility to the public and of personal interest and reliability in performance of official duties is an important factor in the esprit de corps of the Organization. And in turn there are benefits and com-

pensations to the employee.

Certainly there is a greater sense of accomplishment and greater satisfaction in the job when one feels that his services contribute directly to public safety as they frequently do. In recognition of faithful services and a high sense of public duty and willingness to go beyond the normal call of duty when needed, the Bureau has long followed the policy of placing emphasis on its employees as individuals. To the fullest practicable extent it is the practice to place employees in positions of their preference rather than assigning them to jobs largely without their knowledge and consent. The Bureau also tries to protect the position of the individual employee and maintain assurance of employment as long as the employee does his part in performing his work well. At times the value of this assurance is overlooked amidst the pressures and cross-currents of modern life but it is a policy in personnel administration that is quickly appreciated when one recalls the uncertainty of employment in some organizations.

The history of the Bureau has many interesting anecdotes and illustrations of extraordinary performance of duty during emergencies. In one instance a senior Official in Charge with long experience in the dangers to life during the flooding in hurricanes took complete charge of the situation and evacuated the residents to places of safety, an action directly responsible for saving many lives. While this extraordinary assumption of authority cannot be advocated as a common practice the case offers material for a thrilling narrative. It would be a fine tribute to the traditions of the Bureau if one of our senior "alumni" were to write the history of incidents such as these before they are lost from memory.

Quantitative Precipitation Forecast Studies

THE prediction of precipitation undoubtedly presents one of the most pressing problems in day-to-day forecasting. Operationally useful quantitative precipitation forecasts are essential for flood control purposes, construction activities, agricultural interests, and many other activities. For this reason, a great deal of development work has always been carried on by the Weather Bureau in an effort to improve the guidance material in precipitation forecasting provided to field stations.

For many years, the Hydrometeorological Section has been studying the quantitative precipitation forecasting (QPF) problem. A new technique, using essentially synoptic principles, has recently been developed by this Section and has undergone operational tests at the National Meteorological Center and in the Forecast Center at Washington National Airport, with encouraging results. In an effort to reduce the amount of human computation required, studies are now being undertaken to program certain portions of the method for electronic computer processing.

In the National Meteorological Center, a very promising technique has been developed using dynamic numerical weather prediction principles. This system makes use of the current prognostic output of the National Meteorological Center electronic computer and produces a QPF entirely automatically. The technique is undergoing preliminary tests and further development work is being pursued.

While much of this effort is aimed primarily at the improvement of operationally useful QPF techniques, more fundamental studies are also being carried on. As a by-product of the basic research conducted by the General Circulation Research Section, certain studies leading to a better understanding of the precipitation mechanism are being pursued. Some valuable preliminary results have been obtained and the work is continuing. The study of cloud and precipitation droplet formation, work which is also basic to QPF improvement, is being carried on in the Office of Physical Research.

Because of the urgent need for more precise forecasts which faces the meteorologist every day, we may at times wonder if anyone is doing anything about our difficulties. We may be assured that, in this field, as in many others, much effort is continually being devoted to the solution of these problems.

High Rate of Correspondence Study Continues

THE semi-annual report on Weather Bureau employee participation in Pennsylvania State University correspondence courses in meteorology shows that in the six-month period ending June 30, 1959, the total course service to the Weather Bureau was 652. Of this number, there were 161 course completions and 193 new enrollments.

This is excellent proof of employee activity in self-improvement. The fact that this high rate of participation has continued over a period of about eight years is probably a record achievement among agencies the size of the Weather Bureau.

Secretary of Commerce

AS we go to press the Senate has confirmed the nomination of Acting Secretary Frederick H. Mueller as Secretary of Commerce. See January 1959 TOPICS for a resume of Mr. Mueller's career.

Weather for Nuclear Field Tests

ON July 1, 1959, a countdown took place on the final power run of the KIWI-A Experimental Nuclear Reactor. The place was a vast desert basin appropriately named Jackass Flats, at the foot of Skull Mountain in southern Nevada. Jackass Flats is part of the Atomic Energy Commission's sprawling Nevada Test Site and will soon share the spotlight of scientific achievement that has made neighboring Frenchman Flat and Yucca Flat familiar names.

As with the tests of A-bombs, the "go" signal on nuclear reactor tests was given only in good weather and with satisfactory winds. The strictest safety precautions were observed and on the remote chance that calculations have erred, operations will not begin until the Weather Briefing Officer has assured that any radioactive effluent will be carried on a trajectory that will keep it away from working areas and places of habitation until diffused and completely harmless.

The Weather Prediction Officer and Meteorologist in Charge of the Weather Bureau Research Station, Las Vegas, Nevada is Mr. Philip W. Allen, who moved there to establish the station in 1956. Earlier he had participated in furnishing weather advice for various atomic tests including Ranger, Buster--Jangle, and Upshot--Knothole, as a Weather Bureau employee assigned to an Air Force unit. Thus, the highly specialized problems encountered by meteorologists in the atomic age were no novelty to him.

Phil has had forecasting experience at Washington National Airport, LaGuardia Field, and in the Analysis Center since joining the Weather Bureau in 1946. He enlisted in the U. S. Air Force in 1941, attended the University of Chicago as a cadet, then stayed on as a 2nd Lieutenant to teach a year. He was an instructor at the Institute of Tropical Meteorology at San Juan, Puerto Rico for a year, served in Italy for over a year, and was commissioned a Major before his discharge in 1946.

Phil was born on a farm in Iowa and retains his interest there by owning part of the land his grandfather homesteaded. However, he, his wife Jean, and their two active children Douglas, 11, and Deborah, 9, thoroughly enjoy the Las Vegas community in which they live, and even manage to enjoy the climate with the help of a new, completely air-conditioned home (even the garage is air conditioned!). They are active in Scouts, PTA, and church work.

The weather support for all Nevada Test Site nuclear operations has been made a responsibility of the Weather Bureau through agreement with the Atomic Energy Commission. Prior to 1958 the Air Weather Service had provided forecasting service on a demand basis. Preparations for undertaking this responsibility by the Weather Bureau began in June of 1956 with the establishment of the Weather Bureau Research Station at Las Vegas, Nevada. Intensive study was started on such forecasting problems as mountain and valley winds, temperature inversions, wind shear and diffusion in the lower atmosphere over the Test Site, and winds and temperatures to 60,000 feet over southern Nevada.

Much attention has been given to forecast presentation methods since forecasts for major tests are examined in minute detail by an advisory panel on operational safety. Few forecasters have had greater need for a yardstick of forecast accuracy. It has become normal practice at the Nevada Test Site to present upper wind forecasts to the nearest 5°, plus or minus a probable error in fives of degrees.

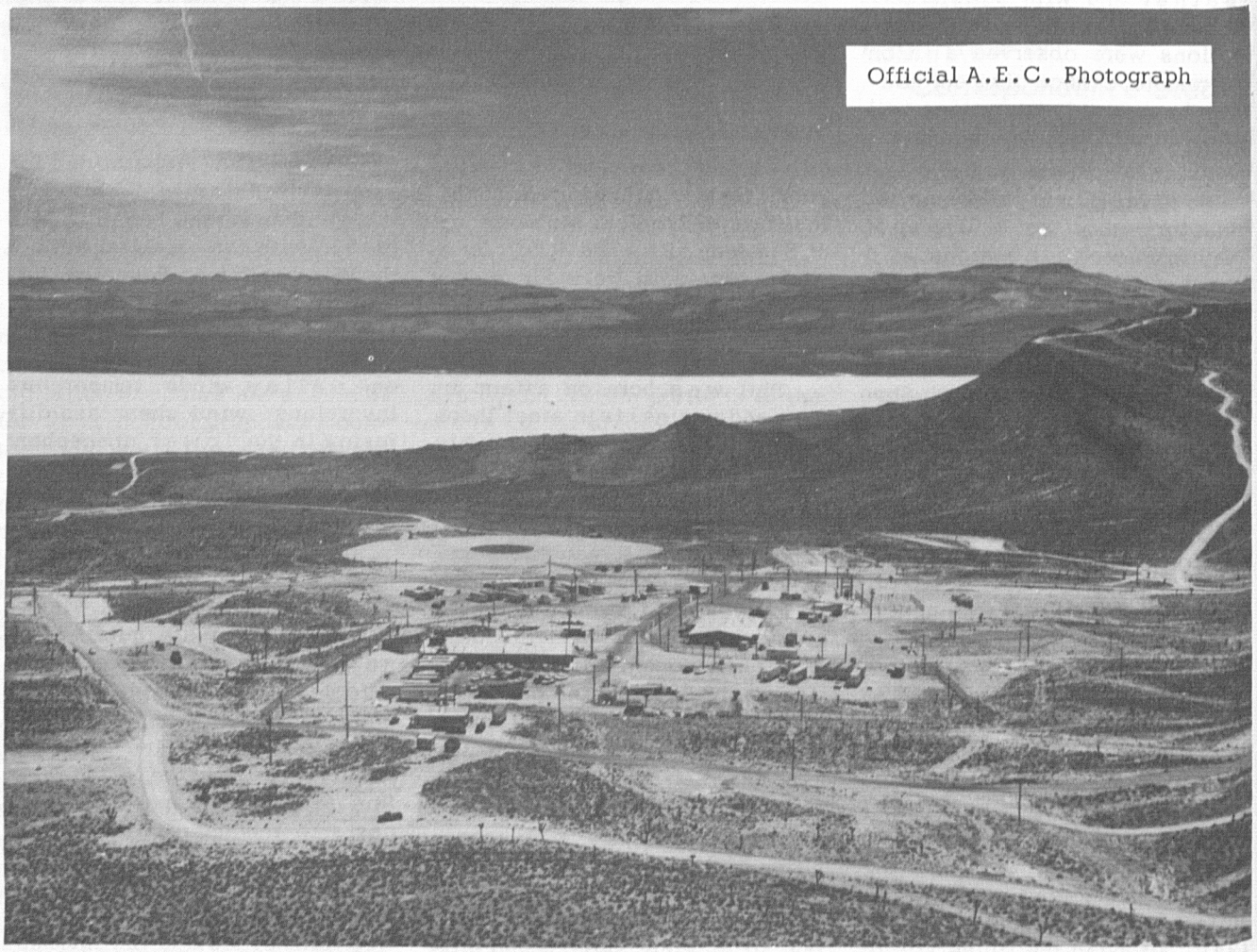
Standard wind coding practices did not provide the information desirable for certain types of

operations and it was necessary in April 1957, prior to Operation Plumbbob, to initiate a program of vertical wind averaging, resulting in reports of wind by 10,000-foot layers to the nearest degree of direction, known as "mean layer winds." A network of 20 Weather Bureau upper air stations in the south-western United States is cooperating by transmitting wind data in this form. The normal Weather Bureau network has been augmented during major operations by three to nine temporary pibal and raob stations scattered over Nevada, Utah, Arizona and California. The Weather Bureau Research Station continuously maintains standby upper wind observing facilities at Tonopah, Beatty, and Alamo, Nevada, and Shoshone, California.

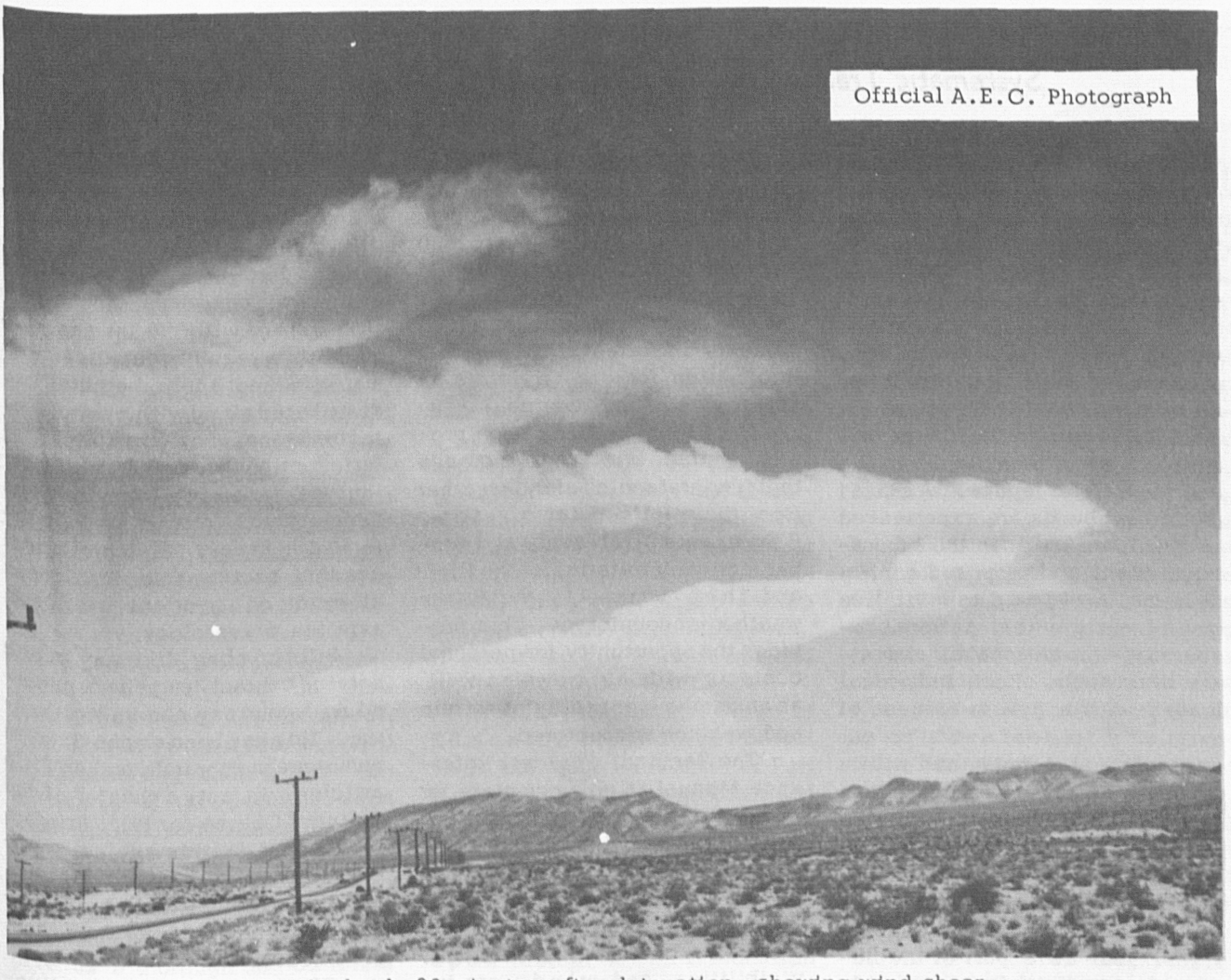
For climatological information, research projects, daily forecasting and the monitoring of winds for prolonged operation of reactors, the Weather Bureau Research Station is operating a network of 14 wind recording stations (mostly on 100-foot towers) with recorders remoted to two manned observing stations. Numerous hygrothermographs and rain gages are in use, the total surface network covering an area 36 miles in diameter and ranging in altitude from 3,000 to 7,400 feet. By the end of this year present plans call for installation of a radar wind computer and plotter and a digitalized weather data telemetering network of nine stations providing vector mean winds with standard deviations, temperatures, and vertical gradients to 100 feet. The station expects to have the use of data from two 500-foot micrometeorological towers which will be installed as part of a blast measuring program.

During nuclear test operations part or all of the research station is incorporated into the Nevada Test Site Organization at the Weather Prediction Unit and the Meteorologist in Charge becomes the Weather Prediction Officer. Selected meteorologists are designated to be Weather Briefing Officers.

Activities of the research station may be extended to provide weather support for the nuclear experiments of Operation Plow-



Yucca Lake and Control Point Area in Yucca Pass



A-bomb cloud, 20 minutes after detonation, showing wind shear

share, which seeks to apply nuclear energy to such peaceful uses as digging harbors, crushing oil shale, and storing heat energy underground. If these plans materialize, the Weather Bureau Research Station personnel will be on occasional temporary duty in such scattered locations as New Mexico, Colorado, and Alaska.

(The publication of this article is prohibited in any other publication or periodical.)

American Geophysical Union

THE new national officers of the American Geophysical Union have been elected, and will take office for a three-year interval. The new officers are as follows:

President - Dr. L.V. Berkner, President, Associated Universities, Inc., New York, N.Y.

Vice President - Dr. F. W. Reichelderfer, Chief, U.S. Weather Bureau, Washington, D.C.

General Secretary - Dr. A. N. Sayre, Senior Scientist, U. S. Geological Survey, Washington, D. C.

The American Geophysical Union is the U. S. National Committee of the International Union of Geodesy and Geophysics. The American group comprises some 5800 members, many of whom are leading scientists in the broad field of geophysics and have been active in the recent extensive IGY activities. The Union will send a good-sized delegation to the Twelfth General Assembly of the International Union of Geodesy and Geophysics and its seven constituent Associations to be held in Helsinki, Finland, July 25-August 6, 1960.

Systematic Training in More Effective Pilot Weather Briefing

IN July, FAWS forecaster Leonard Olson from Idlewild entered a two-week course in Air Route Traffic Control at the FAA's ultra-modern Aeronautical Center in Oklahoma City.

There, selected aviation-minded representatives from government and industry learn about the methods and equipment used to manage traffic at terminals, on the airways and in the continental air space. Actual control problems are experienced on simulated traffic in the laboratory. Plans and proposed control systems, devised to revitalize one of our greatest national resources - the national air space - are discussed. Each individual leaves with a new awareness of aviation's importance to our economy and defense and with a renewed desire to cooperate in meeting the challenge to provide safer and more efficient air commerce.

Thirty-eight forecasters will attend these courses during this Fiscal Year as a part of the Bureau's continuing effort to provide more effective aviation forecasts and pilot weather briefings.

The basic training requirement in applied meteorology to aviation is the Training Course for Pilot Briefers. This includes 17 lessons on information needed to satisfy the pilot's requirement. During the last eight years, over 1000 have taken this course and 964 of these have received certificates. The station briefing manual which presents important local weather information for area flying is an out-growth of this course.

Our flight familiarization program enables briefers to increase their understanding of the weather from the pilot's point of view. Participants first study and prepare forecast material for the flight and then actually verify the weather encountered. This provides the opportunity for personal contacts with air crews as well as an on-the-spot study of terrain and weather encountered.

The Terminal Forecast Reference Manual is now complete for over 150 of the more important air terminals. Additional terminal studies are being added at about one a week. Maps of topography and pollution areas together with climatic information on ceilings, visibilities, and winds are included for each terminal. This is an excellent aid in briefing a pilot on terminals with which he is not familiar.

One of the most important requirements of a profession is keeping up with the research and practical ideas that are continually developing. This is particularly important in Aviation Meteorology which is expanding rapidly to keep pace with the jet age. To meet this requirement, research material and applied studies are distributed along with operational instructions, for example: The Introduction to Atmospheric Turbulence; Forecasting Tornadoes and Severe Thunderstorms, Pilot Briefing with Radar. Meteorological Reading assignments also focus attention on important articles in aviation meteorology.

Pilot briefing, like any public service contact, must be conducted with courtesy and understanding. This has been emphasized in numerous memoranda and TOPICS articles. In fact, a chapter of the Training Course for Pilot Briefers is devoted to this subject. Recordings of idealized briefings have been circulated to standardize style and improve individual techniques.

Of course the real effectiveness of our service is the day-to-day contact with pilots. Here individual initiative and morale combine with training and ability for the "payoff."

MIC Course—Conference on Station Supervision

THIS fall the Weather Bureau will inaugurate a specialized course for MIC's. This course will cover topics on the art of supervision, the MIC's role as part of Bureau management, and public relations. The need for such a course has long been felt by many MIC's who have written to the Central Office about it, and the Bureau is now in a position to carry out the suggestion.

There will first be a pilot course in September, to be attended by Regional Administrative Officers, who will help the Central Office staff develop materials for the course. Subsequently, a series of two-week courses will be held at the Regional Administrative Offices, to which MIC's will be detailed. Central Office representatives will help the Regional Offices conduct the program.

These courses will not be of the lecture-type, but will be based on the principle of "learn by doing". Their title, "Conference on Station Supervision" is meant to convey the thought that the participants will contribute a great deal to the course by discussion and demonstration. In view of this, each participant will be given a month or more to prepare his own materials to bring to the course. Further details concerning this will be published later.

Farmers Go Flying

By George Brewster (WB Pilot)

ON June 11, at 1531, the Weather Bureau Cessna (N9829A) picked its wheels off the runway at Washington National Airport to start a trip into the 49th State of the Union. The task at hand was to accompany a group from The National Flying Farmers of America, the first mass flight to Alaska.

The rendezvous point for all aircraft going on the flight was Edmonton, Alberta, June 13. Except for a rough engine which necessitated an unscheduled stop at Winchester, Virginia, and for a 55-knot surface wind at Regina, Saskatchewan, the trip to Edmonton was routine and uneventful.

At Edmonton final preparations were made to fly over the wide open spaces to the northwest. (The requirement for survival equipment may seem a little unnecessary at this point but soon after your departure from Edmonton you appreciate having it along.) The Department of Transport had several of their well-trained and experienced personnel give us a thorough and complete briefing of the proposed route. They did a wonderful job of making everyone aware of what was ahead and instilled a spirit of confidence and security. A Canadian Department of Transport, DC-3, with several officials aboard accompanied the group across Canada to give every possible assistance and satisfy our needs.

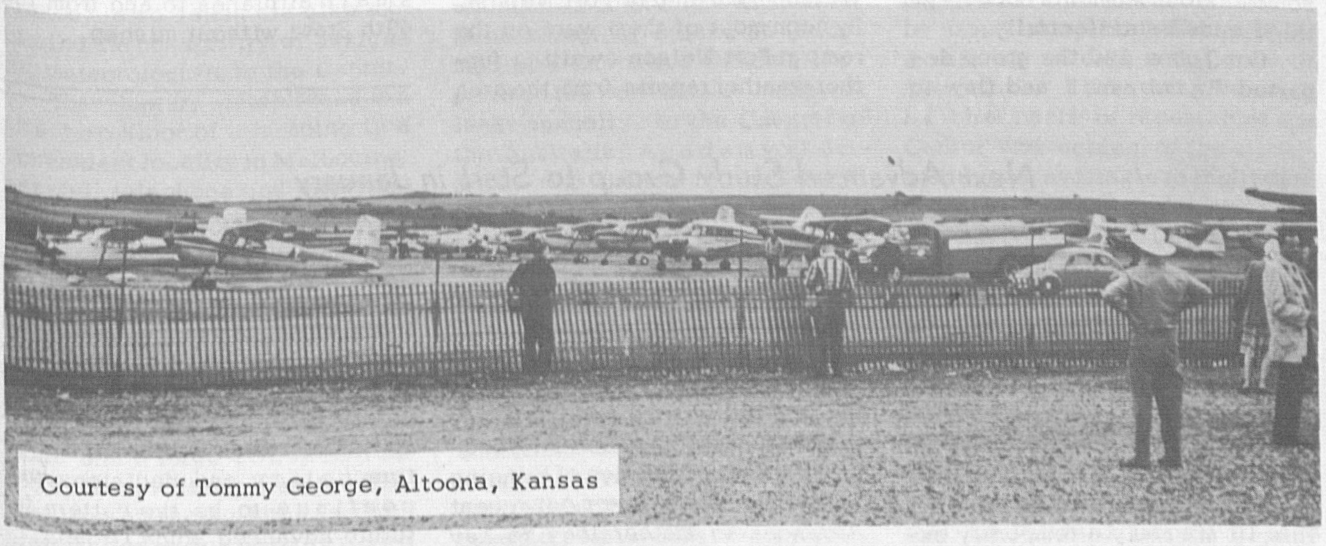
On June 14, we made our first hop to Dawson Creek, British Columbia, where an elaborate ceremony was staged to inaugurate their new airport and to establish a Chapter of the National Flying Farmers. From the outdoor breakfast of bacon, eggs, hotcakes, and coffee to the parting souvenir of the "Zero Mile Post," it was a big day for aviation and the people of Dawson Creek.

A talk with the forecaster in Edmonton brought out the fact that the cold front north of Fort Nelson was acting up a bit and some weather might be encountered, "But I say, ol' chap, I don't think you will experience any great trouble."

A few planes left immediately upon receipt of this information and were able to get into Fort Nelson as scheduled. The next group found Fort Nelson closed so had to land at an emergency strip (Prophet River) about 65 miles from Fort Nelson. The next group of four Tri-Pacers encountered weather before reaching Prophet River so they settled down on the Alaskan Highway. The last group met the advancing weather at a point still farther south so they squatted on another emergency strip (Sikanni Chief) some 130 miles south of Fort Nelson. 9829A spent the night here too, after a trip to Fort Nelson and Prophet River disclosed the fact that all aircraft were accounted for. These emergency strips are watched over by someone living in the vicinity, so as soon as a plane lands a car drives out to the strip to see if they can be of assistance. Many of these emergency strips also have a telephone available.

The next morning ground fog slowed operations but by noon all had reported into Fort Nelson and were on their way to Watson Lake and/or Whitehorse. After clearing customs at Whitehorse, everyone headed for Northway, Alaska.

At Northway we were greeted by some of the FAA Regional Of-



Courtesy of Tommy George, Altoona, Kansas

Dawson Creek, British Columbia

fice personnel, as well as station employees, who offered their services to make our visit to Alaska as easy and enjoyable as possible. At other stops the FAA was on hand to help out. The Weather Bureau and FAA were in on all operations and did a very commendable job whenever called upon.

The overnight stop at Northway was rather unusual but interesting. The planes were lined up on the sod alongside the runway and all types of tents, sleeping bags, hammocks, and beds were to be seen. The one thing in common for all was the mosquito netting and the cans of mosquito spray. Breakfast was prepared by using gas stoves or an open campfire.

A special route forecast indicated CAVU into Fairbanks so the planes left like flies chased from the sugar bowl. Everyone arrived in Fairbanks safely and was hauled in buses to a dormitory at the University of Alaska. This was our home for the next three days.

From Fairbanks flying trips were made to McKinley Park, Fort Yukon, and Arctic Circle Hot Springs. With a nice "High" over the interior of Alaska, every day was as near perfect as could be expected. One or two temporarily-lost aircraft caused some anxious moments but everything ended satisfactorily.

On June 19, the group departed Fairbanks and flew to Palmer which is in the famous Manatuska Valley. The weather was still holding CAVU and everyone reported a very enjoyable flight. The people of Palmer and vicinity really rolled out the red carpet and gave the group something much bigger and better than "southern hospitality." Since the hotel could not handle the entire group, two Pullman cars were on the sidetrack to catch the overflow from the hotel. Surface tours were made into the farming area of the valley, and flying tours to Anchorage and Homer.

On June 22, we started the long trip back. WBAS Anchorage indicated everything along our route was well above minimums except possibly the ridge in the Sheep Mountain area. 9829A was flown along the route and as soon as the pass opened the group was advised and they all took off for Northway.

The weather beyond Northway was again marginal so 9829A went ahead to determine the actual conditions. The weather along the route was flyable so a radio message back to Northway to this effect satisfied the pilots and the group was soon airborne enroute to Whitehorse.

At 0600 the next morning most of the planes were enroute to Watson Lake and/or Fort Nelson. By noon most of them were on the ramp at Fort Nelson awaiting further weather reports from the area to the south.

After a quick refueling, 9829A was off to determine actual weather conditions along the route. A radio message back to Fort Nelson advised the weather was above minimums and no difficulty would be encountered during the next hour. However, some planes waited too long to take off and about two hours later a thunderstorm moved across the path of flight and forced a few back to Fort Nelson. The majority of the group got through to Fort St. John where several stayed for the night and some, including 9829A, went on to Edmonton.

The next day the return trip via Regina, Minot, Minneapolis, and Chicago was started. On June 26, at 1500, the Cessna 9829A put her wheels back on the runway at Washington National Airport.

Word has since been received that all the planes of the group have returned home safely. One reason for the perfect record is that this group of pilots know their limitations and do not hesitate to "get down" when they have reached the limit of their abilities and their planes' capabilities.

9829A logged 72.5 hours for a total of about 10,000 miles and has played an important role in getting the first mass flight of small airplanes to and from the 49th State without mishap.

Next Advanced Study Group to Start in January

THE MIC course "Conference on Station Supervision," described in another article in this issue of TOPICS, will tax the Training Section staff in its preparation to such an extent that it will be necessary to start the next Advanced Study Group in January instead of September. This is merely a temporary expedient, for after the MIC course is decentralized to the Regions, the regular Advanced Study Group schedule will be resumed, with one beginning in September 1960 and another in February 1961.

The Advanced Study Group plan has been outstandingly successful in its objective of bringing the application of the most recent advances in meteorology to key personnel. It has also been successful in giving the Groups a close view of the over-all objectives of the Bureau and of the thinking behind long range policy decisions. This combination of purely technical information and its interrelation with administrative policy and decisions will continue to be the pattern for future Advanced Study Groups.

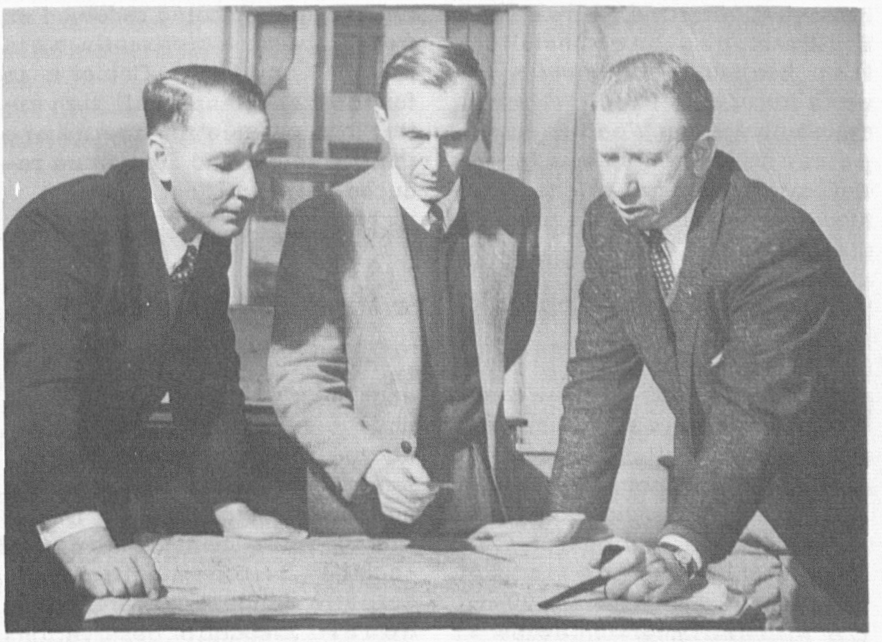
International Antarctic Analysis Center Established

THE Australian Government, acting on the advice of the Australian Academy of Science in response to an invitation by the Special Committee for Antarctic Research (SCAR), established early this year an International Meteorological Antarctic Analysis Center (IAAC) in Melbourne.

The staff of the new Center comprises about 10 permanent assistants and a section leader, all of whom are provided by Australia, but the collaboration of other countries has been sought for an adequate number of meteorologists to ensure full and mutual benefit from the program. The leader of the Center is Mr. H. R. Phillpot, initially supported by Mr. K. T. Morley, who worked during 1958 in the IGY Little America Weather Central. The U. S. representative, Mr. T. I. Gray, Jr., formerly meteorologist in charge of the IGY Little America Weather Central and a member of the Weather Bureau since 1941, joined the section on June 22. Lt. Commander J. Timbs, Royal Australian Navy, is expected to join the section in August. It is understood that Argentina, France, and Japan are also exploring the possibility of assigning meteorologists to the Center.

The Center, established on the top floor of a building in a convenient locality in Melbourne, has full telephone and teletypewriter facilities and is equipped for reception by facsimile of the output of the Central Analysis Section of the Australian Bureau of Meteorology located about one mile away.

In addition to excellent plotting and analysis accommodations and a large conference room, there will be, when modification of the building is completed, space for library and research facilities. The library



Left to right—Henry Phillpot, Keith Morley, and Tom Gray.

from the IGY Little America Weather Central, the progenitor of the new Center, has already been moved to the Center.

The work of the Center is broadly controlled by a Joint Working Party of the Commonwealth Bureau of Meteorology and the Australian Academy of Science, with the Director of the Australian Meteorological Bureau as Chairman and Executive Officer. Reports on the work will be made, at least annually, to the Council of the Australian Academy of Science, and thence to the Special Committee for Antarctic Research (SCAR). Dr. L. M. Gould, President of Carleton College, is the U. S. delegate to SCAR. Dr. H. Wexler is advisor to the U. S. delegate.

The principal purpose of the new Center is to develop and undertake current analyses and to study techniques of Antarctic analyses. The primary task is to compile reliable circumpolar charts south of 30°S. latitude for the surface and the 700, 500, and 300 mb constant pressure surfaces, at 0000Z and, for the surface at least, 1200Z. A preliminary version will be broadcast as quickly as possible, it is hoped within 12 hours of observation time, through the meteorological subcontinental broadcast from Canberra. The final analysis will be checked against all available sources of data and placed on microcards. These analyses will be the basis of research at the Center and copies of the microcards made available to interested organizations. Regular bulletins will not be published by the Center; its work will be mainly known through its broadcasts and microcards and by research papers published in established journals.

The problem of securing the required surface and upper air observations is being slowly resolved. Reports from Antarctica and the Falkland Islands Dependencies Survey are being relayed

by the U. S. Naval Air Facility at McMurdo, Antarctica and New Zealand. A direct radio link between Antarctica and Australia will be instituted within six months, after the necessary equipment has been installed. New Zealand also forwards reports from South Pacific Islands. The South African Weather Bureau passes selected reports for the Union, and observations from Madagascar and Mauritius are being relayed through Cocos Island. Argentina is exploring the practicability of South American reports being relayed across Antarctica. Although at present reports are not being received as frequently or as promptly as is necessary if the Center is to function efficiently, all authorities are cooperating to ensure that omissions and delays are reduced to a minimum.

Activities in Support of the Pacific Missile Range

ON July 1, 1959, a new first-order station was established at the Point Arguello Naval Missile Facility near Lompoc, California, some 21 miles from the WBAS Santa Maria. The observational program at the new station consists of twice-daily rawinsondes at 00 and 12Z with intermediate rawins at 06 and 18Z, a complete program of surface aviation observations and ballistic wind observations in support of missile firings from the launching pads at Point Arguello. The station also will take special rawinsonde observations in support of missile launchings from Vandenberg Air Force Base which is located nearby.

The upper-air program was transferred from Santa Maria. The Weather Bureau is contributing to the operation all personnel and supplies required for the twice-daily rawinsonde program formally operated there. Additional personnel and equipment are provided by transfer of funds from the U.S. Navy. The total staff of the station is 13.

The following is quoted from a progress report by Mr. Norman J. Asbridge, Technician in Charge:

"We are now furnishing ballistic winds on request for Range Operations use. Normally, these will be only occasionally needed for short periods of time. However, for the current project 'Sunflare,' ballistic winds are needed each hour, 12 hours each day, 7 days a week. Project Sunflare started July 13, and will continue for an indefinite period, perhaps as much as two months. During this time, 36 man-hours are needed each day for determination of the ballistic winds. We are taking double theodolite observations when possible and utilizing a Navy radar for rawins when fog or low clouds prevent pibals. We also have a wire-sonde with a 16-foot blimp but preliminary trials have not been satisfactory due to the necessity of using radar for height determination when the blimp is in the clouds."

Personnel who read the job invitations for Point Arguello will recall that the housing difficulties in the Lompoc area were stressed. In this connection, successful arrangements have been made between the Secretary of Commerce and the Secretary of the Air Force for certification of Weather Bureau employees at Point Arguello for special privileges under an FHA law regarding housing in areas impacted by military activity. The resulting action will materially improve the housing situation for Weather Bureau people in Lompoc.

On June 28, 1959, the USNS DALTON VICTORY sailed from San Francisco on the first of the so-called "recovery ships" to be used in connection with activities of the Pacific Missile Range. Aboard are five Weather Bureau personnel who will take upper-air and surface observations in support of downrange PMR activities. It is quite likely that additional Weather Bureau personnel will be required aboard a "range ship," the USNS HAITI VICTORY, in a very short while. The programs aboard the two types of vessels will be somewhat different with that aboard the recovery ship being generally more comprehensive.

All of these programs are moving along well and we are confident that the U. S. Navy will have every reason to be satisfied with the performance of Weather Bureau personnel in these important jobs.

Another Honor for the Department of Commerce

PRESIDENT Eisenhower established an award in October 1954 to stimulate greater activity for the Federal Safety Program through the development of a productive competitive spirit among Federal agencies and personnel.

Awards are presented annually to those Federal departments and agencies which, in the opinion of judges chosen from outside the Government, record the greatest improvement over the previous year in occupational safety.

There are two awards; one for establishments with more than 50,000 employees, and one for those with fewer than 50,000 employees.

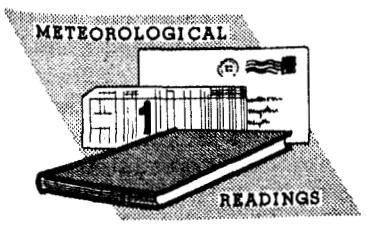
The Department of Commerce and the General Services Administration were the two agencies recommended by the panel of judges to receive the Awards for 1958.

A message from the President was read at the Safety Awards Ceremony held in the Inter-Departmental Auditorium on July 1.

In the words of the President; "Accident prevention requires daily attention. I hope the head

of each Department and Agency in the Federal establishment will review his safety program and intensify his efforts to reduce work injuiries. In this vital area, the activity of the Federal Safety Council and its affiliated field councils is most helpful to each one of us."

All Bureau employees should take particular pride for their contribution to the winning of this award, since at a ceremony held in the Office of the Secretary of Commerce on May 12, the Weather Bureau, for a second straight year, was presented the Secretary's Award of Merit for the "Continued --- maintenance of an aggressive and effective safety program which resulted in a six percent reduction in personal injuries from the previous two year record."



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXVIII: The Forecast Problem by H. C. Willett on pages 731 through 746 of the Compendium of Meteorology.

About the Assignment: Weather forecasting is far from an exact science. However, the need for better forecasts is accentuated by rapid advances in jet travel, space research, and nuclear technology. This article evaluates various forecasting methods and explores the possibilities of improving them.

QUESTIONNAIRE

Col. 61 Which type of meteorological organization is best suited to carry on research leading to a better understanding of large scale atmospheric processes?

1. Local
2. Regional
3. National
4. International

Col. 62 In using observed 3-hour pressure tendencies to forecast deepening or filling, what adjustments are needed?

1. Doubling the amount of the tendency
2. Subtracting the tendency from its predecessor
3. Correction for normal diurnal trend
4. None of the above

Col. 63 Which of the following techniques can be eliminated as a source for developing greatly improved short range forecasts?

1. Numerical
2. Physical
3. Statistical
4. Objective

Col. 64 Which of the following appears likely to contribute towards technical improvement of present forecasting procedures?

1. Better observations
2. Standardized techniques
3. Better forecaster training
4. All of the above

Col. 65 Which of the following most nearly describes the contribution of frontal and air mass analysis to scientific weather forecasting?

1. Completely satisfactory
2. Disappointing
3. Promising
4. Total failure

Col. 66 Which of the following most nearly fulfills requirements for objective verification?

1. Public opinion poll
2. Opinion of supervisor
3. Evaluation as good, bad, or indifferent
4. Impersonal numerical evaluation

Col. 67 Why is the statistical extrapolation technique unsuitable for use in forecasting unusual weather occurrences?

1. Doesn't provide enough detail
2. Not based on accurate data
3. Keyed to the most probable occurrences
4. Only good for temperature forecasting

Col. 68 Which of the following are famous for their work on lag correlations between current or past weather anomalies in one region and subsequent anomalies in another region?

1. Bjerknes and Solberg
2. Pettersen and Rossby
3. Baur and Walker
4. Wexler and Namias

Col. 69 Which of the following best describes the utility of vertical cross-sections in short range forecasting?

1. Of no practical use
2. Only of academic interest
3. Useful, but not widely utilized
4. Only of slight usefulness

Col. 70 Better numerical forecasts depend primarily on greater knowledge of which of the following?

1. Electronic circuitry
2. Mechanics of general circulation
3. The human equation
4. Climatology

NEW MIC'S

WBO Tatoosh Island, Washington

ELVYN C. PYE was selected to succeed William C. Melendy, Jr. as Observer in Charge at WBO Tatoosh Island, Washington.

Mr. Pye began his career with the Federal Service April 1940 as Junior Observer with the Bureau at Sandberg, California. Subsequent assignments have been at Payson, Arizona; San Francisco, Los Angeles, and Bishop, California. His service has been

continuous with the exception of a military furlough and a period of leave without pay to attend school under the GI Bill of Rights. He completed the Forecaster's Course at Chanute AFB and continued his education at UCLA.

From June 1952 to January 1957, he served as Meteorologist in Charge at Bishop, California. From January 1957 until his reassignment at Tatoosh Island, he was MIC at Yuma, Arizona.

Mr. Pye's training and experience in the field of meteorology make him well qualified for his new assignment.

WBAS Yuma, Arizona

RAY GUENZI was selected to succeed Elvyn C. Pye as Meteorologist in Charge at WBAS Yuma, Arizona.

Mr. Guenzi entered the Bureau at Denver, Colorado in July 1939 and has had assignments at Sioux City, Iowa, and Scottsbluff, Nebraska. He was transferred to Yuma as Forecaster in November 1955.

Mr. Guenzi attended Denver University and during World War II served in the Navy as Aerographer's Mate. His training and experience make him well qualified for his new position.

RETIREMENTS

Cleaburn B. Cave

CLEABURN B. CAVE, Meteorologist at Wichita Falls, Texas, retired on disability July 7.

A native Texan, Mr. Cave graduated from Princeton, Texas High School and attended East Texas State Teachers College prior to entering the Weather Bureau as a Junior Observer at Dallas in 1942. He served in the Armed Forces from 1943 to 1946, attending North Carolina State College under the Army Specialized Training Program and earning sufficient credits to complete work for his B. S. degree in physics in 1945. He returned to duty with the Weather Bureau at Dallas in April 1946, and in 1947 he was granted LWOP to attend MIT where he was awarded his M.S. degree in Meteorology in 1948. Leaving the Bureau in 1949, Mr. Cave transferred to the Army Chemical Center at Camp Detrick, Maryland, serving as a meteorologist until 1951 when he accepted a position with the E. I. du Pont Company, where he engaged in air pollution abatement studies. He was reinstated in the Bureau in 1956 as a Forecaster at Wichita Falls and served at this station until illness necessitated his retirement.

Mr. Cave's mailing address is 2209 Fillmore Street, Wichita Falls, Texas.

Edmund S. Huttel

EDMUND S. HUTTEL'S retirement on July 31 from his position as photographer in the Central Office Printing Section terminated a career of more than half a century devoted to the art of photography, which included nearly 26 years of government service.

Mr. Huttel's career commenced back in 1905 as manager of a photographic laboratory. World War I found him serving as a Sergeant (photographer) in the Army Signal Corps. While stationed in Paris he married the former Germaine Marie Chaumont.

Returning to his hometown of Bethlehem, Pennsylvania, following discharge from military service, Mr. Huttel set up his own studio where he engaged in commercial photography for 16 years. His government service dates back to September 1935 when he accepted a position as photographer with the Department of Agriculture, where he was employed until March 1943 when he transferred to the Weather Bureau. Mr. Huttel's work for the Bureau was of uniformly high quality, and his supervisors consistently rated him outstanding in skill, accuracy, and production.

Mr. and Mrs. Huttel plan to remain in this area. Their mailing address is 2909 Rolling Road, Baltimore 7, Maryland.

Billy F. Krizan

BILLY F. KRIZAN, Meteorologist at the National Hurricane Research Project in Miami, retired on disability June 30.

Mr. Krizan entered the Weather Bureau on August 1, 1949, as a Meteorological Aid at New Orleans. He accepted a similar assignment at Burrwood in 1950, and the following year he was transferred to Birmingham, where he served as Forecaster for five years. While stationed at Birmingham he completed work for his B. S. degree in Mathematics at Howard College, and in 1956 he was selected for a Weather Bureau scholarship at Florida State University. Mr. Krizan was granted LWOP in 1957 to study for his M. S. degree in Meteorology, which he received at Florida State in the spring of 1958. Having specialized in tropical meteorology, Mr. Krizan was selected for the position at NHRP, where he served until illness necessitated his retirement.

Mr. Krizan was born in Waco, Texas, but moved to Louisiana with his family at an early age. Following graduation from high school in 1944, he joined the Air Force and for the next two years he attended Rutgers and the University of Minnesota under the Army Specialized Training Program, as well as taking weather training and serving as an observer at San Bernardino Army Air Field. Following his discharge from military service, Mr. Krizan attended Baylor University for one year and the University of Texas for two years prior to joining the Bureau at New Orleans in 1949.

Mr. Krizan's mailing address is 2248 Stanford Avenue, Baton Rouge, Louisiana.

John D. Letsinger

JOHN D. LETSINGER, Hydrologist at the Tulsa River Forecast Center, retired July 31 on disability after more than 32 years of Weather Bureau service.

Mr. Letsinger graduated from Technical High School in Memphis, Tennessee, and attended Memphis State Teachers College. His government service dates back to October 10, 1926, when he received a temporary appointment as minor observer at Memphis. He was converted to probational status on April 16, 1927, and served at Memphis in general weather and river service until 1942 when he transferred to Macon in charge of the Hydrologic Reproduction Unit. He went to Tulsa in 1944 to head up the airport station and later served as Official in Charge of the Weather Bureau office in that city until the River Forecast Center was established in 1947. Mr. Letsinger's many years' experience in river forecast operations prepared him well for his assignment as Hydrologist in the RFC, the position he held until illness forced his retirement.

Mr. Letsinger will continue to make his home at Tulsa where friends may contact him at 5935 East Seventh Street.

Madeleine B. Triplett

MADELEINE B. TRIPLETT, Meteorological Aid in the Central Office, Hydrologic Services Division, retired on disability July 31 after more than 21 years of government service.

Mrs. Triplett joined the Weather Bureau on November 7, 1947, as a statistical clerk in the Hydrologic Services Division. She was promoted to meteorological aid in 1956, serving in this capacity in the Hydrologic Investigations Section until her retirement.

A graduate of the District's Central High School, Mrs. Triplett was employed in private industry in Washington prior to accepting her first government assignment with the Agricultural Adjustment Administration in 1933. She left the government service in 1943 to return to private industry and was reinstated four years later when she entered the Weather Bureau.

Mrs. Triplett's mailing address is 367 North Glebe Road, Apartment No. 3, Arlington 3, Virginia.

Norman R. Hagen

NORMAN R. HAGEN, Public Information Coordinator, died suddenly of a heart attack on August 15. (For a resume of Mr. Hagen's career see July 1959 TOPICS.) It is difficult to find words that adequately cover the loss of such a devoted employee but perhaps the following statement issued to the press by the Chief of Bureau best expresses the feeling of those who knew him well.

"Norman Hagen was a close personal friend of many years' association. During World War II and since then he has been a leader in the field of public information in meteorology.

"His sudden death is a grievous loss to all of us who knew him well.

"As recently as last Friday evening, I had talked with him about some projects on which he expected to work tomorrow.

"Mr. Hagen was in the field of work he loved best and he has died with his boots on. His interest in the opportunities for public service in the field of public relations in meteorology developed during his service at the front in World War II and later during his years of service as Meteorological Attache in London and other European Capitals. He outlined his aims in this field to me during one of the international conferences we attended together at Lausanne, Switzerland in the latter 1940's. During the past seven years in Washington he has had the satisfaction of seeing his plans come to fruition through his own tireless efforts.

"His confidence in his profession and in its importance in future growth and his devotion to the meteorological profession are well known to his host of acquaintances and friends. His friendships were warm and lively. It is hard to realize that he has passed on and we shall miss him gravely."

Ralph V. Hanlon

RALPH V. HANLON, Principal Assistant at Dodge City, lost his life in the Arkansas River on June 6. His twin children (age 10) called for help when they waded into deep water. The children managed to float to safety, but Ralph drowned attempting to reach them.

Mr. Hanlon was born in Sterling, Kansas, on January 21, 1913. He entered the Bureau as an observer at Knoxville on January 10, 1939, and later served at Elkins, Fairbanks, Kansas City, and AWP Boston before his transfer to Dodge City in 1946.

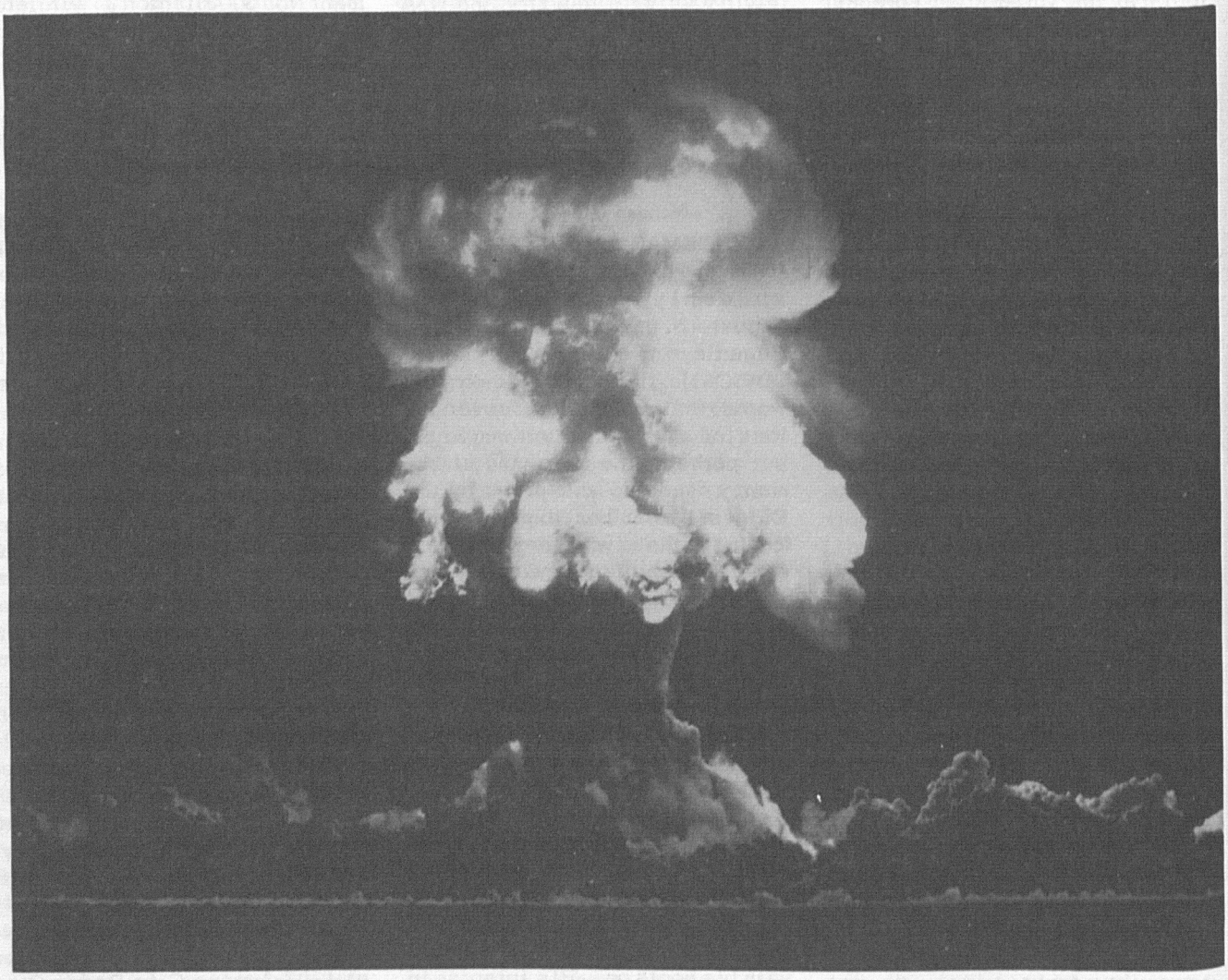
Mr. Hanlon is survived by his wife and three children, who live at 1707 Avenue C in Dodge City.

Marilyn J. Ollikainen

MARILYN J. OLLIKAINEN, Secretary at WBAS Detroit, lost her life in an automobile accident on June 14.

Miss Ollikainen was born in Portage Township, Michigan, on May 25, 1940. She attended Fordson High School, Dearborn, where she received several awards for her stenographic accomplishments. She joined the Weather Bureau on August 18, 1958.

Miss Ollikainen is survived by her mother, Mrs. Edward Kahkoren, 4722 Orchard Street, Dearborn, with whom she made her home.



Fireworks, Nevada Test Site Style. Official A.E.C. Photograph

For story see page 133.

Weather Bureau

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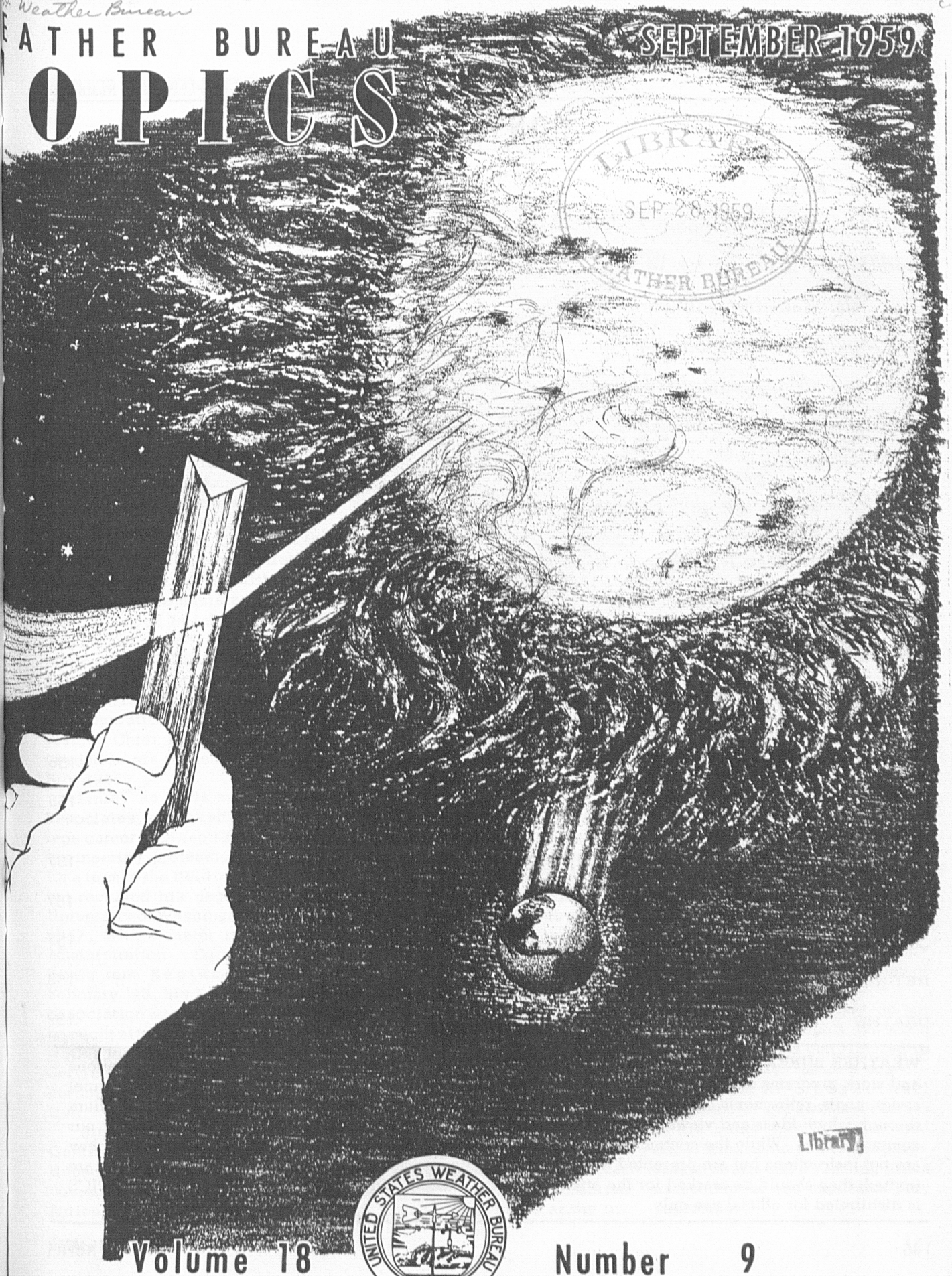

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WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information 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.

CHIEF ADMINISTRATIVE OPERATIONS DIVISION

Ernest L. Kvam

ERNEST L. KVAM, Chief of the Administrative Operations Division, started with the Bureau as an Emergency Assistant and was later appointed a Junior Observer at the Seattle, Washington, Airport in August 1941. His career was interrupted from May 1942 through January 1946 for duty with the Air Corps, after which he returned to Seattle as a Meteorological Aid. The end of the same year he transferred to the Seventh Regional Office in Seattle, with assignment to the materiel field.

The reorganization of the Regions in 1949 saw Mr. Kvam moving to Salt Lake City, and in recognition of his administrative accomplishments and ability as a Regional Office assistant, to the Central Office in July 1951, with assignment to the Plans & Program Management Office as an Organization and Methods Examiner. He was transferred to the Administrative Operations Division as Assistant Chief in 1954, and succeeded to his present position in July 1958.

Ernie, as he is known to his associates, embarked on his college career with aspirations to the engineering profession, changed for a term to the field of education, but received his degree from the University of Washington in March 1947, with a major in Business Administration. During the academic term September '47 to February '48, his Regional Office association was curtailed, so that he might attend the Sixth Administrative Intern Program of the Civil Service Commission, as the Department of Commerce representative.

Since his assignment to the Central Office Mr. Kvam has continued his academic career with courses at the Department of Agriculture Graduate School, the American and George Washington Universities where he has majored in meteorology and administration. He will receive his Masters degree in Public Administration within the next year.

Ernie, his wife Genevieve, and their daughter Linda (age 12) have a house in one of the nearby suburbs in Fairfax County, Virginia after being apartment dwellers for quite a few years. Home ownership provides one with a medium of self expression, and not to be outdone and in addition to his classroom and study time, he has found time to complete their basement recreation room with floor and ceiling tile, and panelling. The family piano, a rather recent addition ostensibly to provide music lessons for young Linda, as well as to furnish "Gen" with an instrument she played during her school days, represents Ernie's latest "world to conquer." As recreation he spends many hours at the instrument not so much to keep ahead of the other members of the family, but to prove to his own satisfaction that it can be done.

During their years in the West, both Ernie and Gen (their college romance culminated in marriage in 1943) spent a great deal of time together on the golf links and trout streams. His schedule of classes and studies have necessitated that he forego his golf, and Westerners usually scoff at our Eastern streams and fish. Camping as a family unit is another of their favorite indulgences.

Their other activities do not interfere with the part the Kvam family plays as a contribution to their community. Ernie's schoolboy prowess as a basketball sharpshooter and swimmer results in his being able to give a good accounting of himself on the playground courts and swimming pools as a volunteer and unofficial play supervisor.

WB Plays More Prominent Role in Aircraft Accident Investigation

PROCEDURAL changes by the Civil Aeronautics Board in the conduct of aircraft accident investigation and procedural changes in the Weather Bureau's Aviation Weather Service during the past 2-3 years have resulted in increased participation by the Weather Bureau in aircraft accident investigation.

Early in 1957 the CAB changed their hearing procedures to provide for the designation of "Interested Parties to the Investigation." The Interested Parties include government agencies and industry groups who are directly concerned with the accident under investigation. The following may be designated as an interested party: airline involved in accident; manufacturer of aircraft and/or components, such as engines or instruments; Air Line Pilots' Association; Dispatchers Association; FAA; and Weather Bureau. (The Weather Bureau is designated as an interested party when weather is considered to be a significant factor in the accident.) Each designated interested party has one representative-spokesman who represents his group at the pre-hearing conference, where areas of investigation and line of questioning to be followed with each witness are outlined. He also represents his group at the public hearing where he has an opportunity to question witnesses as deemed necessary to help bring out all facts pertinent to the investigation. A Central Office and/or Regional Administrative Office official is representative-spokesman for the Weather Bureau. In addition to the spokesman, 1-3 Weather Bureau witnesses may be requested to appear at the public hearing.

The development of new forecasting and observing procedures and techniques and the addition of new aviation weather service programs have had an accumulative effect on the areas of weather service which must now be considered in connection with aircraft accident investigations. For example, the inauguration of the In-Flight Weather Safety Service made it necessary in each accident case to determine whether Flash Advisories pertinent to the flight were issued. The same applies to Aviation Severe Weather Forecasts - it is now necessary to determine whether or not Aviation Severe Weather Forecasts pertinent to the flight were issued. With the more common use of Radar, these reports and scope photographs are being used as exhibits. Other areas which are now considered in addition to the normal reports and forecasts include calibration of wind equipment, interpretation of end-of-runway equipment records, adequacy of nighttime visibility markers, etc.

The investigation of the Chase, Maryland, accident of May 12, 1959, where a Capital Airlines Viscount broke up in the air, is a very good example of the prominence the weather factor may take in these investigations. Since active thunderstorms were reported in the area at the time of accident and lightning was reported to have struck the aircraft, weather became a significant factor in the investigation from the start. The Weather Bureau was designated as "Interested Party to the Investigation" early in the investigation. As the investigation progressed it became evident that turbulence was a factor that must be thoroughly examined. This led to the decision to have SELS make a special study of the atmospheric turbulence in the Baltimore area for May 12. After further co-ordination with the CAB an expert witness from SELS was requested to be present at the hearing. Also, during the course of the hearing an expert witness on lightning was called to testify. The following Weather Bureau people participated in the investigation and hearings: Messrs. Donald House and Jean Lee, SELS; Messrs. Marvin Hunter and Robert Foster, WNA; Messrs. L. Harrison and S. V. Wyatt, Central Office. Some 7-8 hours of the three-day public hearing were spent in testimony of meteorologists and dispatchers, covering reported and forecast weather conditions, degree of turbulence possible, possibility of lightning strikes to the aircraft and the communications of pertinent meteorological information to aircraft in flight. The full participation of the Weather Bureau in connection with this accident was well justified, since there were indications from the testimony that turbulence may have been a contributing factor in the aircraft break-up.

Additional Personnel for WSR-57 Operations

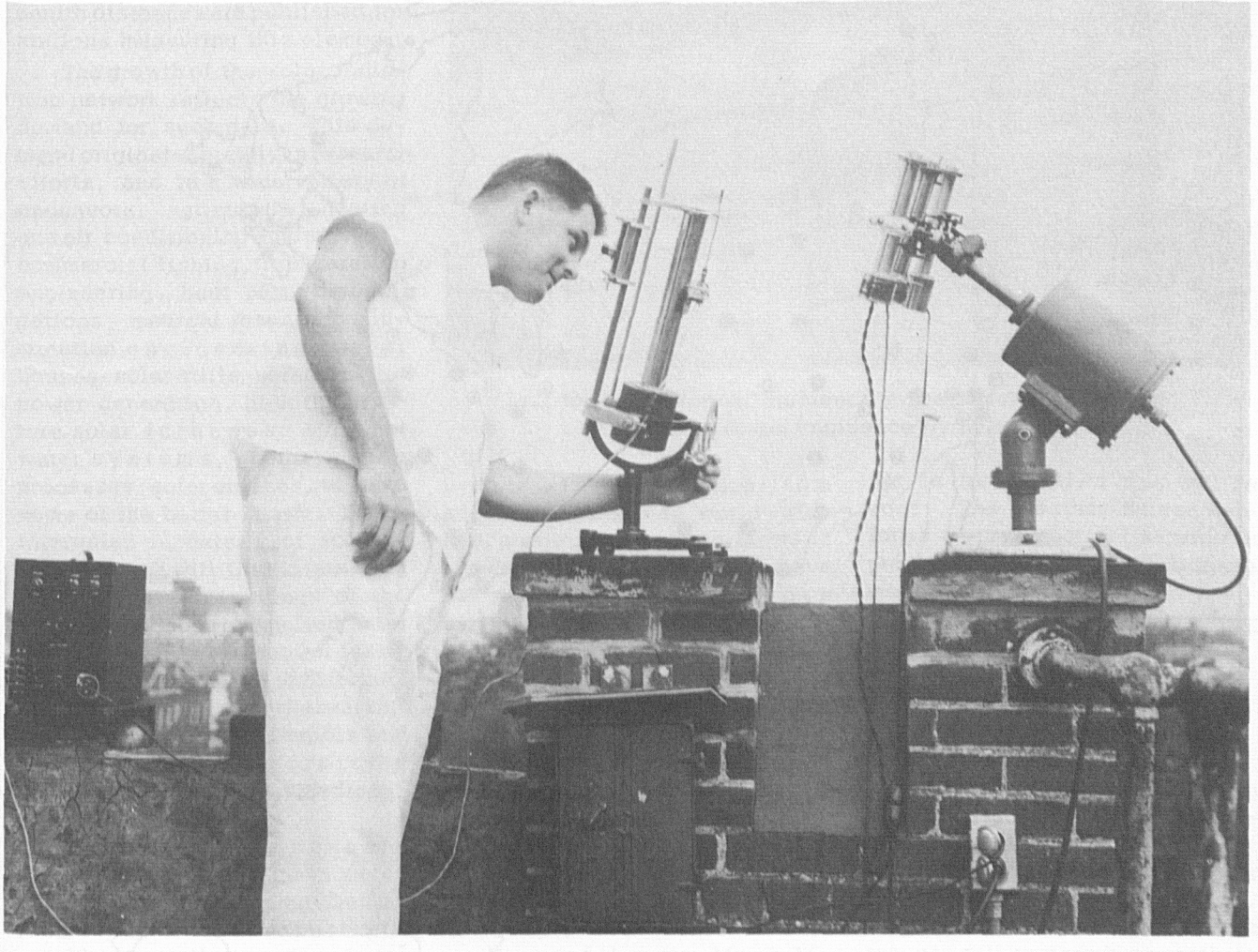
THE Congress has approved for Fiscal Year 1960 eighty-two additional positions for operation of the WSR-57 radars. Together with those previously approved for Fiscal Year 1959, this completes the budgetary action toward obtaining operating personnel for this new equipment.

On July 17, 1959, the fourth of the four-week radar training classes was completed at the University of Miami. A total of 75 people were trained in the four classes. Negotiations are now underway with the University for additional classes during the current fiscal year. Present plans call for five or six classes during the last eight or nine months of this fiscal year.

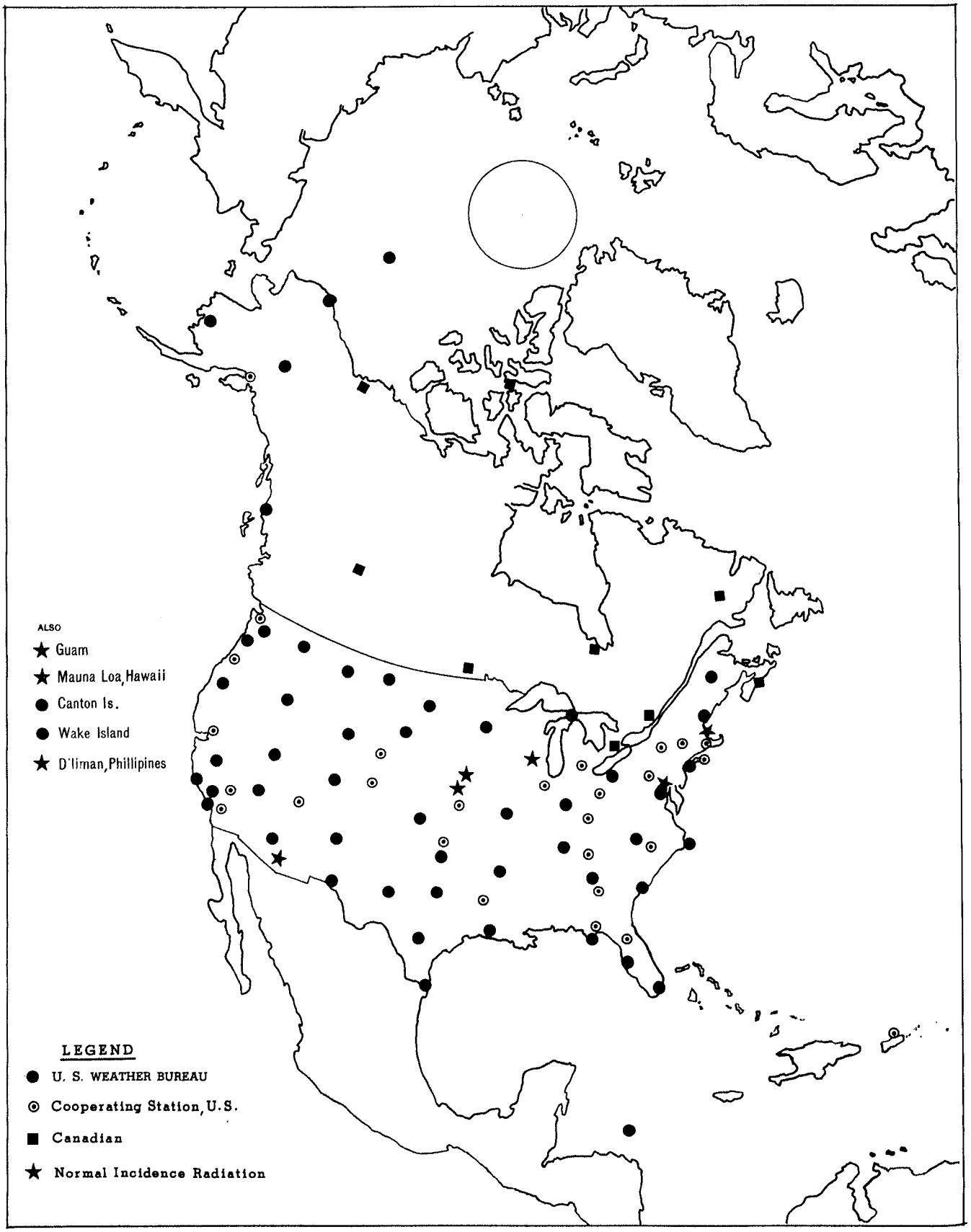
Our Solar Radiation Network

THE Weather Bureau solar radiation measuring program has come a long way since its beginning in 1902. In that year observations were started at Asheville and Black Mountain, North Carolina. In 1907 measurements were started at Mount Weather, and about that time at Washington, D. C. Madison, Wisconsin, was added to the list in 1910, and Lincoln, Nebraska, in 1911. By December 1948, there were 10 stations operated by the Weather Bureau in the network and 14 additional cooperative stations. A substantial expansion in the program occurred in 1949, which with a few subsequent changes led to our present network of 62 stations operated by the Weather Bureau and in addition 26 stations operated by other organizations in cooperation with the Weather Bureau. These figures do not include five stations in the Antarctic and one in the Arctic which are conducting solar radiation programs as part of the IGY International Geophysical Cooperation, a continuation of the program.

At most stations the solar radiation equipment consists of a horizontal incidence pyrheliometer for measuring solar radiation in the horizontal plane, as received directly from the sun and scattered from the sky, together with an appropriate recording potentiometer and, in some cases, an integrator. The latter is read once a day to give the total energy per unit area for the day. The unit of measurement is the "langley," or gram calorie per square centimeter. At a few stations the equipment includes a device which measures power per unit area on a plane normal to the sun's direction, directly from the sun. More precisely, it measures this ele-



Leo McMullen examining normal incidence radiation instruments.

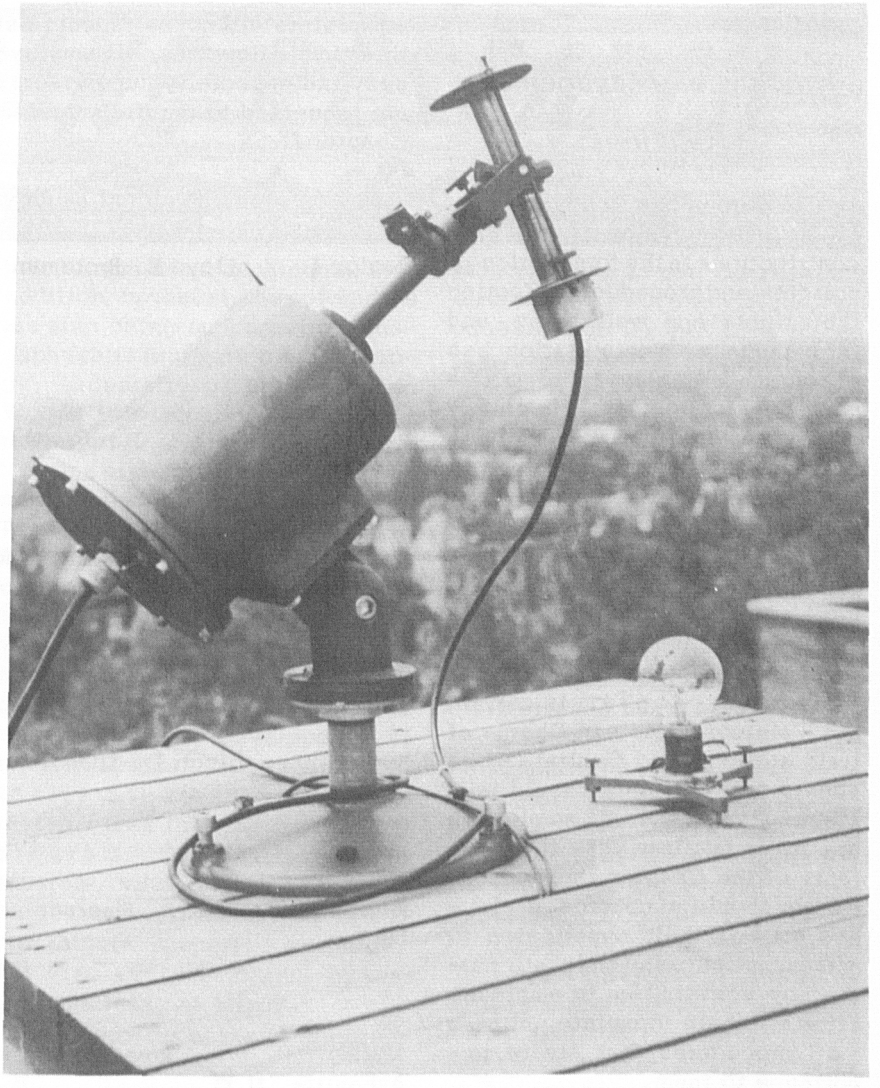

ALSO
Guam
Mauna Loa, Hawaii
Canton Is.
Wake Island
D'liman, Phillipines
LEGEND
U. S. WEATHER BUREAU
Cooperating Station, U.S.
Canadian
Normal Incidence Radiation

ment from a small solid angle centered on the sun. This is the normal incidence pyrheliometer. It is installed on a polar mount which is turned by a synchronous motor to keep the device pointed at the sun. In field installations the horizontal incidence pyrheliometer is placed in a spot where the horizon as seen from the instrument has a minimum of obstructions.

The solar radiation data are punched on cards and processed by machine methods. Daily totals of solar radiation from all of the network stations are published each month in Climatological Data, National Summary. A map, showing distribution of mean daily radiation for the month over the United States, is shown. Normal incidence data for selected solar zenith distances are published for stations measuring this element.

The growth of the solar radiation network reflects the growing demand for such data. This demand originates mainly in research efforts, and in a wide variety of endeavors: agriculture, heating and air conditioning engineering, commercial fishing, refrigeration engineering, heat pump investigations, medical research, illumination engineering, solar houses, solar stills, solar electric power generation, high temperature solar furnaces, solar hot water systems, photosynthetic processes, solar engines, to name some of the better known. Those interested in details of some of this research will find interesting material in "Proceedings of the World Symposium on Applied Solar Energy," Stanford Research Institute, Menlo Park, California, 1956; and "Solar Energy Research," edited by Farrington Daniels and John A. Duffie, University of Wisconsin Press, Madison, Wisconsin, 1955.

Of more immediate concern perhaps is the use made in meteorology of these measurements. A survey of the literature will quickly show that such data are used in studies ranging from micrometeorology to world-wide heat budget studies. So far as is known, solar radiation data have not yet been used routinely on a synoptic basis, but the day may not be far off when this will be done. The Weather Bureau performs a very important service in providing the data basic to these many activities.



Left to right—Normal incidence pyrheliometer and mount. Horizontal incidence pyrheliometer.

Old Maximum Thermometer

SAM DUKE of Wilmington, North Carolina reports:

What First Order Weather Bureau Station can top this?

Maximum thermometer No. 19283

Compared April 1916

Received at station March 15, 1920

Information contained on correction card, Form No. 4067E-Mis.

I am certain this thermometer has not been in use all this time, but it is in use now and as far as we can tell registers correctly."

Employee—Management Relations

THE Bureau has always recognized the value of employee contributions in the formulation of policies and procedures affecting their rights and well-being, and through an open invitation has encouraged employees to make comments or suggestions on any policy matter affecting their welfare. This policy is outlined in more detail in Chapter D-60 of the Weather Bureau Manual, "Employee - Management Relations," which was distributed earlier this year. The Chapter sets forth the requirements and procedures under which the Bureau's employment-management program is carried out. Meteorologists in Charge of field stations and Central Office supervisory officials should take steps to insure that all employees are fully familiar with the contents of the Chapter, and in particular should encourage employees under their supervision to make comments and suggestions—thereby contributing to employee efforts to help formulate policies and procedures that are of importance to them.

Employment Policy Complaints

IN previous issues of TOPICS since September 1955, the President's Executive Order No. 10590, Department of Commerce Administrative Order No. 201-21, effective January 7, 1959, and the Weather Bureau's program, as contained in Chapter D-65, Weather Bureau Administrative Manual, were presented.

Since the Weather Bureau's program as outlined in Chapter D-65 was reissued on May 18, 1959, the procedures for filing complaints will not be repeated at this time. However, all employees, and especially supervisors, are requested to carefully review Chapter D-65.

The designated Regional Employment Policy Officers and Deputy Employment Policy Officer for the Weather Bureau are as follows:

Regional Employment Policy Officers

Region I	Lloyd E. Brotzman	Weather Bureau Regional Administrative Office Federal Building New York International Airport Jamaica 30, N. Y.
Region II	Erle L. Hardy	Weather Bureau Regional Administrative Office Fort Worth 2, Texas
Region III	Arthur W. Walstrom	Weather Bureau Regional Administrative Office 16th Floor Federal Office Building 911 Walnut Street Kansas City 6, Missouri
Region IV	Hugh D. Spangler	Weather Bureau Regional Administrative Office 222 S. West Temple Street Salt Lake City, Utah
Region V	Mac A. Emerson	Weather Bureau Regional Administrative Office Box 80 Anchorage, Alaska
NWRC Asheville, N.C.	Roy L. Fox	Director National Weather Records Center U. S. Weather Bureau Arcade Building Asheville, N. C.
Hawaiian & Pacific Islands	Nels E. Johnson	Meteorologist in Charge Pacific Supervisory Office U. S. Weather Bureau Box 3650 Honolulu, Hawaii
San Juan	Ralph L. Higgs	Meteorologist in Charge U. S. Weather Bureau Airport Station Isla Verde International Airport San Juan, Puerto Rico

Deputy Employment Policy Officer

Central Office	Ernest L. Kvam	Chief, U. S. Weather Bureau Washington 25, D. C. Attention: Mr. Ernest L. Kvam

SINCE its inception the National Hurricane Research Project planned a balanced program in which proportionate efforts were to be directed toward applied research for the immediate improvement of hurricane forecasts and basic research for increasing the fundamental knowledge of hurricane structure and dynamics. From the latter should ensue the ultimate hurricane forecasting techniques and a practical estimate of the limitations which are possible both in forecasting and modification of such storms. Efforts in these two directions have been limited only by the number, calibre, and interests of the researchers available to the Project. Supporting these investigations, of course, has been the large data collection effort. This has been necessary - and it is very necessary that it continue - in order that sufficient data can be made available to develop and test, adequately, hypotheses concerning hurricane formation, intensification, and movement.

The Project plans continued support for further development of numerical prediction of hurricane movement and of numerical models for studying genesis and intensification problems. For some time a research group under the direction of Dr. Platzman at the University of Chicago has been working on numerical prediction. This group is sending a representative to Miami this summer to study forecasting techniques used by the field forecasters. It is the feeling both of Professor Platzman and of NHRP that the current dynamical models can be improved if modified to take advantage of the principles currently being employed by the forecasters through use of empirical techniques. In addition, further studies of models are also being supported at Massachusetts Institute of Technology, University of Chicago, and Woods Hole Oceanographic Institution.

One of the primary purposes of moving the Research Operations Base of NHRP to Miami was to facilitate exchange of ideas concerning applied research between the forecasters and the research workers. The interchange of ideas between the two groups should give emphasis not only to applied research and to development of new concepts, but should also facilitate the incorporation of tested ideas into the operational program. To keep a balanced program, work will continue on basic research, principally by the contractors supported by NHRP, but also to some extent by the group working at Miami.

The Project plans to continue the observational program. The consensus of the members of the Board of Review at the Miami Beach Hurricane Technical Conference was that the observational program should be continued at a high level. For example, Professor Petterssen said "data presented at this Conference seemed to indicate that we have hurricanes of various types, and that we are not yet in a position to provide a family of hurricane models or a satisfactory classification of hurricanes. I think, therefore, that the Project must plan for a continuation of data collection and analysis over a period of several years." Remarks made by several other distinguished members of the Panel indicated there should not be any abatement soon in the data collection program. The Project expects to use the research aircraft to collect as much data as possible from the formative stages of tropical storms. This has been one aim from the beginning. Since the new aircraft will allow much more flexible staging from almost any airport, it is expected that there will be a greatly increased collection of data from storms in various stages of genesis. The planes will also be used for collecting research data in jet streams, squall lines, and other meteorological patterns during the off-hurricane seasons.

Continued support is planned for research on the relation of the environmental centers of action and long wave patterns in the atmosphere to the formation, intensification, and movement of hurricanes.

NHRP has supported research for the last three years in the use of radar observations for studying hurricanes. At the present time extensive use is being made of radar pictures of hurricanes by research workers at the University of Chicago, Woods Hole Oceanographic Institution, Florida State University, and at Miami. It is expected that with the more powerful radar sets (APS-20E) to be installed on the DC-6 aircraft, radar observations from future hurricane flights will be much better than those which could formerly be collected. Plans to re-orient the Project's efforts in this direction have already been made to the effect that full use will be made of these observations and also of the radar observations made at the various ground installations - to gain greater understanding of hurricane motion and structure.

Pilot Project in Extended Forecasting for Fire Weather

IN order to explore the possibility of furnishing more effective extended period (five-day) forecast information to fire control agencies, Mr. Francis D. Beers, Fire Weather Meteorologist of Portland, Oregon was temporarily assigned to the Extended Forecast Section at Suitland, Maryland. The assignment was from mid-March to mid-May 1959.

Working with the staff of the Extended Forecast Section and Office of Meteorological Research, Mr. Beers studied the theories and techniques employed in extended period forecasting with particular emphasis on weather elements considered important for fire control planning purposes. Following these initial studies, work was undertaken to test the relationships between these elements and the prognostic material routinely prepared and distributed by the Extended Forecast Section. The result of these tests indicated that the large scale time-averaged patterns of the circulation are distinctly related to humidity changes and other elements which influence fire behavior.

Two preliminary forecasting techniques for relative humidity in the Pacific Northwest and thunderstorm occurrence in the Northern Rocky Mountains were developed, and initial tests have indicated that they can be used to provide operationally useful information. Limited distribution of an informal report on these studies has been made to offices in the Weather Bureau and Forest Service. Additional copies may be obtained from the Office of Meteorological Research.

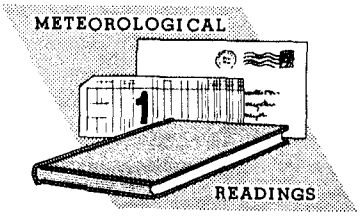
High Performance Rawinsonde Stations

TO provide some recognition for outstanding performance in the rawinsonde program, the 10 stations having the highest average raob altitude quarterly will be listed in TOPICS. The list for the quarter January-March 1959 follows:

Rank	Station	Average Alt. (m)
1	*Quintero, Chile	28,988
2	Nome, Alaska	28,862
3	*Curacao, Neth. Antilles	28,581
4	*Puerto Montt, Chile	28,478
5	*Merida, Mexico	28,424
6	Lihue, T. H.	28,118
7	*Guadeloupe, F.W.I.	28,094
8	Ely, Nevada	28,018
9	Yakutat, Alaska	27,920
10	Santa Maria, California	27,794
	Average for all raob stations	25,100

*Cooperative Station.

Observers at the above stations are congratulated for their efforts in making this high performance possible. While there are some factors beyond the control of observers, we believe that in general the results will be significant.



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXIX: Fog by Joseph J. George on pages 1179 through 1189 of the Compendium of Meteorology.

About the Assignment: This article presents a forecaster's simplified fog classification; then it explains how to predict the occurrence of the various categories. In spite of better fog forecasts, radar, fido, and other inventions, fog continues to menace surface and air transportation.

Col. 61. Which type of foreign matter is believed to be most effective as condensation nuclei?

1. coal dust
2. metallic particles
3. sand
4. salt

Col. 62. In which of the following localities does George's restricted heating radiation fog graph fail to give good results?

1. within 50 miles of the seacoast
2. in shallow interior valleys
3. over rolling countryside
4. in the piedmont

Col. 63. Which of the folowing is favorable for the formation of ground fog?

1. complete lack of turbulence at surface
2. decrease of moisture content vertically
3. cloud cover
4. radiation

Col. 64. What characterizes a potential radiation fog situation where the relative humidity does not exceed 80 or 85 percent?

1. fog invariably forms

2. fog cannot form
3. fog may form
4. none of the above

Col. 65. Advection-radiation fog occurs in air masses which have been over which type of surface?

1. grass
2. sandy soil
3. water
4. clay soil

Col. 66. Which range of liquid water content (gm/m^3) was found by Radford to be most common when the horizontal visibility was 1000 ft?

1. .06 to .2
2. .3 to .9
3. .01 to .02
4. .4 to .7

Col. 67. What best describes the occurrence of radiation fog over snow cover?

1. very frequent
2. quite rare
3. same as over grass or earth
4. never occurs

Col. 68. How many hours would it take for the ceiling to lower to below 600 ft. in a potential prewarm front stratus condition where the ceiling at the beginning of precipitation was 5000 ft. with dew point depression 10°F?

1. 4
2. 6
3. 8
4. 10

Col. 69. Which condition is invariably present during the final stages of sea fog formation?

1. instability
2. cooling of overlying air
3. great horizontal air movement
4. insolation

Col. 70. In dealing with stratus clouds, what is the general relationship between cloud thickness and time to clear?

1. thin layers clear slowly
2. thick layers clear quickly
3. the thicker the layer the slower the clearing
4. thickness and clearing time have no connection

Superior Accomplishment Awards

Group Award:		NWRC Asheville
Harold Crutcher	Meteorologist	
Norman Canfield	Meteorologist	
Henry Bent	Project Planner	
Lawrence Eide	Electronic Tech.	Columbia, Mo.
Naomi Fisher	Clerk-Stenographer	Columbus
Irene Kannar	Photostat Operator	Central Office
Mary McCormick	Met. Aid	Philadelphia
Mary McNernie	Retirement Clerk	Central Office
Lynn Means	Meteorologist	Central Office
Group Award:		Raleigh
William Chappell	Meteorologist	
Paul Bowers	Meteorologist	
Sam Duke	Meteorologist	
Wilton Rodgers	Meteorologist	Greenville
John Selmser	Meteorologist	San Francisco
George Tanner	Meteorologist	Salt Lake City
William Umfleet	Met. Aid	Cincinnati
Robert Webster	Met. Technician	Philadelphia
James White	Substation Inspector	Oklahoma City
Justin Young	Clerk	Central Office
Mr. & Mrs. Fred Bowling	Observers, Second-order Station	Flat Top, W. Va.
Lyle Callahan	Met. Technician	Columbia, S. C.
Rosalyn Ebenholtz	Secretary	RAO New York
Walter Glassman	Met. Technician	AWP Boston
Jean Halpern	Clerk-Stenographer	WBO New York
Russell Hanns	Teletype Supervisor	WBAS San Francisco
Frederick McNally	Meteorologist	Rapid City
Richard Moll	Budget Analyst	Central Office
Maximo Nuesco	Met. Technician	Wake Island
John Nyhan	Met. Aid	NWRC Asheville
William Paggi	Meteorologist	Akron
Verdin Liddell	Met. Technician	Bethel
Michael Sunray	Instrument Analyst	Central Office
Gerald O'Donnell	Elec. Specialist	Sabana de la Mar, D. R.
Lloyd DeVol	Elec. Specialist	Kingston, Jamaica, BWI
Alexander Middleton	Elec. Specialist	Grand Cayman, BWI
Warren Langer	Elec. Specialist	Merida, Mexico
Eduardo Dilme	Elec. Specialist	Guadeloupe, FWI
James Courtney	Elec. Specialist	Sint Marten, NWI
Basil Nidy	Elec. Specialist	San Andres, Columbia
Stella Santaniello	Clerk	RAO New York
Margene Tweedie	Clerk-Stenographer	RAO Salt Lake City
Roy Vickery	Met. Technician	Albany
Gilbert Voelker	Meteorologist	Minneapolis
Morris Woerner	Meteorologist	Great Falls
Aaron Zimmerman	Meteorologist	Sacramento

Suggestion Award Winners

Harry Temple
RAO, New York

Robert D. Church
Medford, Oregon

Don K. Halligan
University of Chicago

Laverne L. Sandy
Oklahoma City

Robert A. Baum
San Francisco
Ralph H. Frederick
Albany, N. Y.
William P. Hayes
Syracuse, N. Y.
Lester A. Snyder
RAO, Fort Worth
Robert E. Corbin
Winslow
Leslie W. Bosworth
Central Office
Fred Myers
Portland
Ross L. Cox
Shreveport
Aaron C. Stern
Tulsa
Emmarhetta W. Smith
Central Office
Arthur H. Mason
NWRC, Asheville
Paul M. Murphy
NWRC, Asheville
George L. Courville
Worcester
Mary White
NWRC Asheville
Patricia A. Marriott
Los Angeles
Peter P. Chase
NHRP, Miami
Florence A. Swigert
RAO, Kansas City
Agnes M. Trupo
Central Office
William E. Hillig
Jacksonville
Mary A. Norris
Central Office
Laurel W. Dahlin
Rockford
Seymour Schamach
Tallahassee
Eugene J. Wenglowski
Chicago
Michael Sunray
Central Office
Paul S. Cook
Lake Charles (retired)
R. Keith Leatherwood
Denver
Roy A. Wells
WRPC, San Francisco

Open Letter To You—Mr. Driver

THE following appeared in "Fleet Supervisor" Vol. 57, No. 9, and it is reprinted with their permission.

Dear Driver:

Today my daughter, who is five years old, started to school. She wore a dark blue dress with a white collar, black shoes and blue socks. Her cocker spaniel, Scoot, sat on the front porch and whined his canine belief in the folly of education as she waved goodbye.

Tonight we talked about school. She told me about the girl who sits in front of her — the little girl with the yellow curls, and the boy across the aisle who makes funny faces.

She told me about her teacher, who has eyes in the back of her head .. about the trees in the school yard, and about the big girl who doesn't believe in Santa Claus. We talked about a lot of things .. tremendously vital, important things.

We studied spelling, reading and writing, and then to bed.

She is there now, up in her room, sound asleep. And "Princess Elizabeth" (her doll) is cuddled in her arm.

You guys wouldn't hurt her, would you? You see when her doll's finger is cut, or when a leg is broken, I can fix it. But when my little girl starts to school, when she walks across the street.. well, then she is in your hands.

She's a nice kid. She can run like a deer, and darts about like a chipmunk. She likes to ride her tricycle and go for a walk with me on Sunday afternoon.

But I can't be with her all the time. I have to work to pay for her clothes and education. So, won't you please look out for her and other children.

Please drive slowly past schools and intersections .. and please remember that children forget -- you must not.

A Father

Unused Sick Leave

EMPLOYEES who have accumulated 1000 hours or more of sick leave. This list is made up of names submitted directly from each station or office. If there are employees at your station who have accumulated more than 1,000 hours of sick leave and whose names have not been published please let us know.

Albuquerque, N. Mex. WBAS
Ralph S. Jones

Anchorage, Alaska
John R. Berger
Donal K. Boswell, Jr.
James H. Crockett
Robert E. Fennell
Marvin G. Kelly
Harold E. Lommen
Wilfred S. Mitchell
Alvida H. Nordling
Robert E. Sistrunk
N. Lester Troast, Jr.
Hugh D. Watson
Donald E. Weddle

Asheville, N. C. NWRC
Henry L. Bent
Lewis A. Blodgett, Jr.
Norman L. Canfield
George A. Lankton

Brownsville, Texas WBAS
Ernest G. Bice
Grover T. Collins
Leroy B. Hagood
Jack A. Hansen
Oliver H. Newton
Alvis C. Webb
Lawrence F. Windt

Casper, Wyo. WBAS
Lorin W. Grace

Central Office
Milton L. Blanc
Harold B. Harshbarger
Francis V. Kohl
Helmut E. Landsberg
Harold S. Lippman
William Morrison
Albert A. Poulin, Jr.
Robert W. Schloemer
Edward S. Sproles

Galveston, Texas WBAS
Charles D. Gouldie
Houston, Texas WBAS
James H. Cannon
New York, N. Y. RAO
Rosalyn Ebenholtz
Norfolk, Va. WBAS
Raleigh A. Marshall
Jack W. Miller
St. Louis, Mo. WBAS
Kenneth B. Cochran
Wesley W. Griffith
Harry W. Waldheuser
San Diego, Calif. WBAS
A. W. Anderson
Ellis L. Austin
Jonathan O. Becker
Lester Epstein
John W. Fuller
Kurt M. Muerdter
Gilbert L. Prucha
Spokane, Wash. WBAS
Richard C. Wise
Springfield, Mo. WBAS
Mathias G. Bates
Washington Nat'l Airport
Charles F. Dorer
Guerry L. Fort
Sarah M. Grimes
Eugene W. Hoover
Joseph L. Hudson
Marvin N. Hunter
Joseph P. Krank
Charles V. Lindsay
Donald W. Marier
Victor E. McCrory
James A. Middleton
John P. Winner

Hurricane Preparedness Plan Works Well

THE third Atlantic tropical storm of the 1959 season, hurricane "Cindy," provided several communities an opportunity to test local hurricane preparedness plans. An example was provided by Mr. F. E. Nobles, Disaster Chairman, Georgetown County, S. C., in a letter to Mr. John Cummings, MIC, WBAS Charleston, S. C. Mr. Nobles stated:

"I am pleased to advise that everything went along smoothly here in Georgetown during Hurricane Cindy. Our disaster plan worked out well with everyone cooperating."

"...our disaster workers were kept busy and I feel sure that if the circumstances had been any worse they would have carried out their duties with just as much efficiency."

It should be recognized, of course, that no amount of planning can be effective unless the forecasts, warnings, bulletins, and local statements provide the necessary information to the public and agencies concerned. All Weather Bureau offices and personnel involved are to be congratulated on the excellence of the warning services provided in this storm.

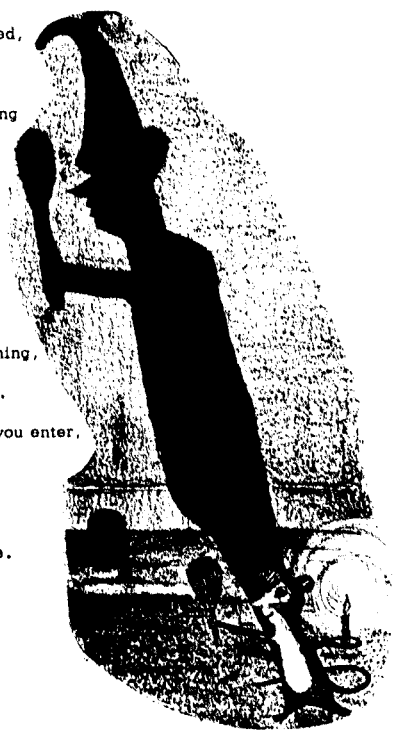
NEW MIC

Lincoln, Nebraska

RICHARD E. MYERS, now an Aviation Forecaster at Denver, Colorado, has been selected to succeed Mr. Welby R. Stevens as MIC at Lincoln. Mr. Myers is 47 years of age and began his Weather Bureau service on April 6, 1940, as an Under Observer at Lincoln. Later assignments were in the Synoptic Reports and Forecasts Division of the Central Office, Denver, Shannon Airport in Ireland and return to Denver. He graduated from the University of Nebraska in 1934 and in 1955-56 attended Iowa State College where he received an MS in Meteorology.

Sometime

Sometime, when you're feeling important,
Sometime, when your ego's in bloom,
Sometime, when you take it for granted,
You're the best qualified in the room;
Sometime when you feel that your going
Would leave an unfillable hole,
Just follow this simple instruction
And see how it humbles your soul—
Take a bucket and fill it with water,
Put your hand in it, up to the wrist,
Pull it out, and the hole that's remaining,
Is a measure of how you'll be missed.
You may splash all you please when you enter,
You can stir up the water galore,
But stop, and you'll find in a minute
That it looks quite the same as before.
The moral in this quaint example,
Is do just the best you can,
Be proud of yourself, but remember—
There is no indispensable man!



(Reprinted with permission from NEWSLETTER Society for Personnel Administration.)

RETIREMENTS

Reuben L. Frost

REUBEN L. FROST, Meteorologist in Charge at Wilmington for the past 10 years and a veteran of 38 years of Federal Service, retired August 31.

Mr. Frost was born on March 14, 1898, at Edmond, Oklahoma. He graduated from Oklahoma City High School in 1917 and entered Oklahoma A&M College that fall. His education was interrupted briefly in 1918 when he served as an infantryman during World War I, but he was able to resume his education after just a few months' military duty, and he received his A.B. degree in 1921.

Mr. Frost's first government service dates back to June 1921 when he received an appointment to teach high school in the Philippine Islands, where he remained for four years. In 1925 he accepted an assignment in the Department of Interior and for the next four years taught in the Indian Schools in the States of Idaho, Nevada, and Oregon. He entered the Weather Bureau as an Observer at Portland, Oregon, on June 1, 1929, transferring to Fairbanks in 1932 where he served for six years, four of which were as Official in Charge. In 1938 he returned to the States as Official in Charge at Richmond, and four years later, during World War II, he entered military service for the second time. He trained at Pensacola and served as an Aerological Officer at New Brunswick, Maine; Norfolk; and Sitka, Alaska. Lieutenant Commander Frost was discharged in 1946 and returned to duty in the Bureau at Key West, remaining in this assignment until he went to Wilmington as Meteorologist in Charge in 1949.

Mr. Frost is held in high esteem by the public in the area served by the Wilmington station. His excellent work was officially recognized in 1955 with the Department of Commerce Silver Medal for meritorious service during Hurricane Hazel in 1954, this being one example of the conscientious devotion to duty displayed by him throughout his career in the Weather Bureau.

Mr. and Mrs. Frost plan to remain in Wilmington after his retirement. Their mailing address in 5101 Oleander Drive.

Arthur J. LaCombe

N September 15, 1917, Arthur J. LaCombe, a young lad of 15, reported for duty as an apprentice at the Weather Bureau office in his home town of Marquette, Michigan. On August 31 retirement from his position as Meteorological Technician at the same station terminated a career of almost 42 years of loyal and competent public service. With the exception of six years as Official in Charge at East Liverpool, Ohio, during World War II, Mr. LaCombe's entire career in government has been spent at Marquette.

Because of his continuous identification with the Marquette station, Mr. LaCombe became a well-known personality in the area served by his office, utilizing very effectively his many years' experience in providing service and promoting good public relations for the Weather Bureau. Combining a warm, pleasant personality with high devotion to duty and the ability to perform creditably any assigned task, he has won the admiration of a host of friends and associates during his long Weather Bureau career.

After retirement Mr. LaCombe will devote considerable time to gardening, and he hopes he will be able to carry out long-cherished plans to travel extensively throughout the United States in his own trailer. He will maintain his residence in Marquette, however, where friends may contact him at 1209 High Street.

J. Harvey Morgan

J. HARVEY MORGAN, a veteran of more than 35 years of Weather Bureau service, retired from his position as Chief of the Communications Unit at San Francisco on July 31 because of disability.

A native Texan, Mr. Morgan reported for duty in the Weather Bureau as a messenger boy on May 26, 1924, in his home town of Corpus Christi. He transferred to San Antonio in 1930 where he served until January 1939 when he was assigned in charge of the airways station at Waynoka, Oklahoma. While stationed at Tucson from 1940 to 1943 Mr. Morgan attended the University of Arizona on a part-time basis. He transferred to WBAS San Francisco on May 16, 1943, and was promoted to Observational Supervisor in 1946, serving in this capacity until 1947 when he entered communications work. He has been Chief of the Communications Unit since 1951.

Mr. and Mrs. Morgan plan to remain in California where friends may contact them at 529 Hawthorne Avenue, San Bruno, California.

Welby R. Stevens

WELBY R. STEVENS, Meteorologist in Charge at Lincoln since 1951, retired July 31, bringing to a close a career of nearly 36 years' service with the Weather Bureau.

A native of Ohio, Mr. Stevens graduated from Findlay, Ohio, High School and attended Ohio State University. He entered the Weather Bureau on September 1, 1923, as an observer at Montgomery. Two years later he transferred to the Central Office where he served as a scientific aid in the Aerological Division from 1925 to 1929. He also attended George Washington University on a part-time basis, receiving his A. B. degree in mathematics in 1930. In his assignment as meteorologist in the Forecast Division from 1930 to 1935 Mr. Stevens was responsible for the coordination of the fire-weather programs for California, Washington, Oregon, Idaho, Minnesota, and North Carolina.

His very fine work was rewarded with transfer to New Orleans in 1935, where his leadership as Supervising District Forecaster contributed immeasurably to the effectiveness of the Gulf Hurricane Warning Service. He served at New Orleans until 1951 when he was selected for the MIC post at Lincoln.

Mr. Stevens plans to do considerable reading and traveling after retirement, as well as devoting much of his time to business interests in Florida. His mailing address is 24 East Harvard Avenue, Orlando, Florida.

Von M. Summers

VON M. SUMMERS' retirement on August 31 terminated a career of almost half a century of communications work which commenced in January 1910 when he was employed as an Office Manager for Western Union Telegraph Company.

A native Virginian, Mr. Summers attended Abingdon High School until 1910 when he accepted a job with Western Union at Pulaski, Virginia. He later worked for the same company at Harrisonburg and Charlottesville, and in 1917 he entered the government service as a telegrapher in the War Department where he was employed until his transfer to the Weather Bureau in 1922. Mr. Summers' entire service has been in the Central Office, and from 1947 until his retirement he was a Supervising Communicator at the Washington National Airport.

Mr. Summers established a reputation for loyal and faithful service early in his career, and prior to a serious illness in November 1958, he had taken no sick leave during his entire government service of more than 40 years. In February 1958 he was commended for his high devotion to duty, having walked four miles through snow and bitter cold to reach the airport during the record snowstorm which occurred that year.

Mr. Summers plans to remain in the Washington area after retirement, and friends may reach him at 601 North Jackson Street in Arlington, Virginia.

Paul J. Divver

PAUL J. DIVVER, Weather Bureau Meteorologist, assigned to the Regional Office of Civil and Defense Mobilization at Harvard, Massachusetts, died suddenly August 5 at the age of 51.

Until the end of 1955, Mr. Divver had been in charge of the Fire-Weather Forecast Program for New England at the Boston Forecast Center. Early in 1956 he assumed his duties at the OCDM headquarters. Working closely with Civil Defense officials, Mr. Divver was responsible for keeping them informed of expected and natural hazards due to weather, as well as the pattern of potential fallout, in the eight-state area, comprising New England, New York, and New Jersey. In this connection he trained WB and OCDM personnel in the use of electronic equipment for measuring fallout. Mr. Divver traveled extensively, giving numerous talks and conducting classes on fallout and related subjects.

A native of Massachusetts, Mr. Divver graduated from Boston College High School in 1926 and received his A.B. degree from Boston College in 1930. He later studied meteorology at M.I.T. He joined the Weather Bureau in 1936 as an observer at Boston. Three years later he was assigned to upper air observational work at Portland, Maine. During World War II (1941) he accepted an assignment on the Atlantic Weather Project, and after two years of ocean weather work, he was detailed to the Bureau's Northern Hemisphere Historical Map Project at New York University. At the end of 1943 he returned to Boston as a FAWS forecaster, serving in this assignment until December 1947, when he was appointed Fire-Weather Forecaster at Boston.

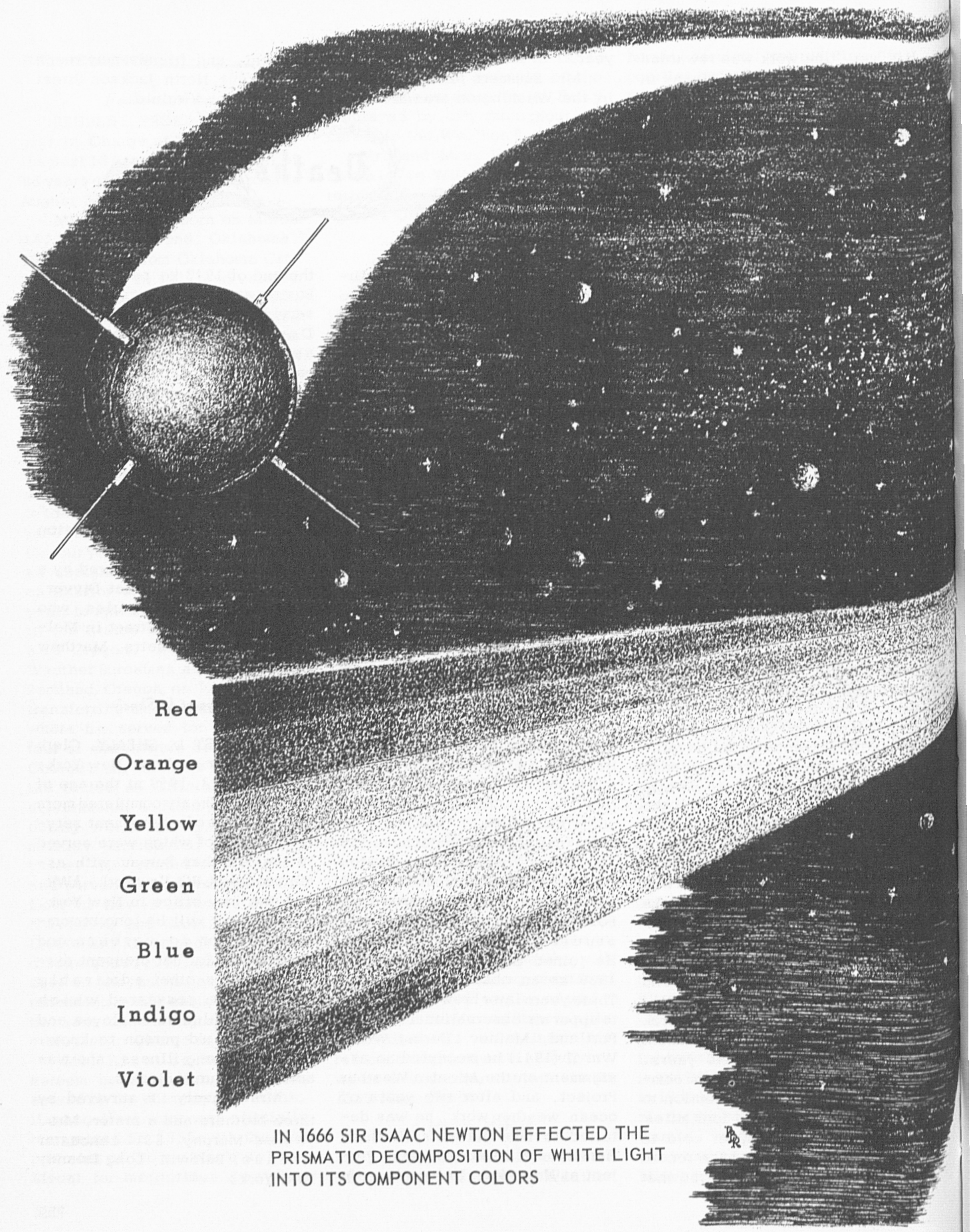
Mr. Divver was a modest, friendly person, well-liked by all his associates. A talented writer, he was noted for his interesting weather stories and broadcasts. He also contributed to the "Forecast Manual for New England," which was prepared by the Boston Office.

Mr. Divver is survived by a sister, Miss Margaret Divver, and three brothers, Charles, who lives at 29 Myrtle Street in Melrose, Massachusetts, Matthew and Neil.

Margaret L. Shealy

MARGARET L. SHEALY, Clerk Stenographer at WBO New York, died August 3, 1959 at the age of 61. Mrs. Shealy completed more than 26 years of government service, over 14 of which were served in the Weather Bureau with assignments at RO New York, AWP, and the city office in New York. Mrs. Shealy will be long remembered by her co-workers and supervisors for her pleasant disposition and other admirable qualities she possessed which made her a valuable employee and such a grand person to know. Despite a long illness, she was active in church circles.

Mrs. Shealy is survived by three brothers and a sister, Mrs. James Murphy, 2311 Lancaster Avenue, Baldwin, Long Island, New York.



IN 1666 SIR ISAAC NEWTON EFFECTED THE PRISMATIC DECOMPOSITION OF WHITE LIGHT INTO ITS COMPONENT COLORS

For story on Solar Radiation see page 149.

WEATHER BUREAU

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TOPICS

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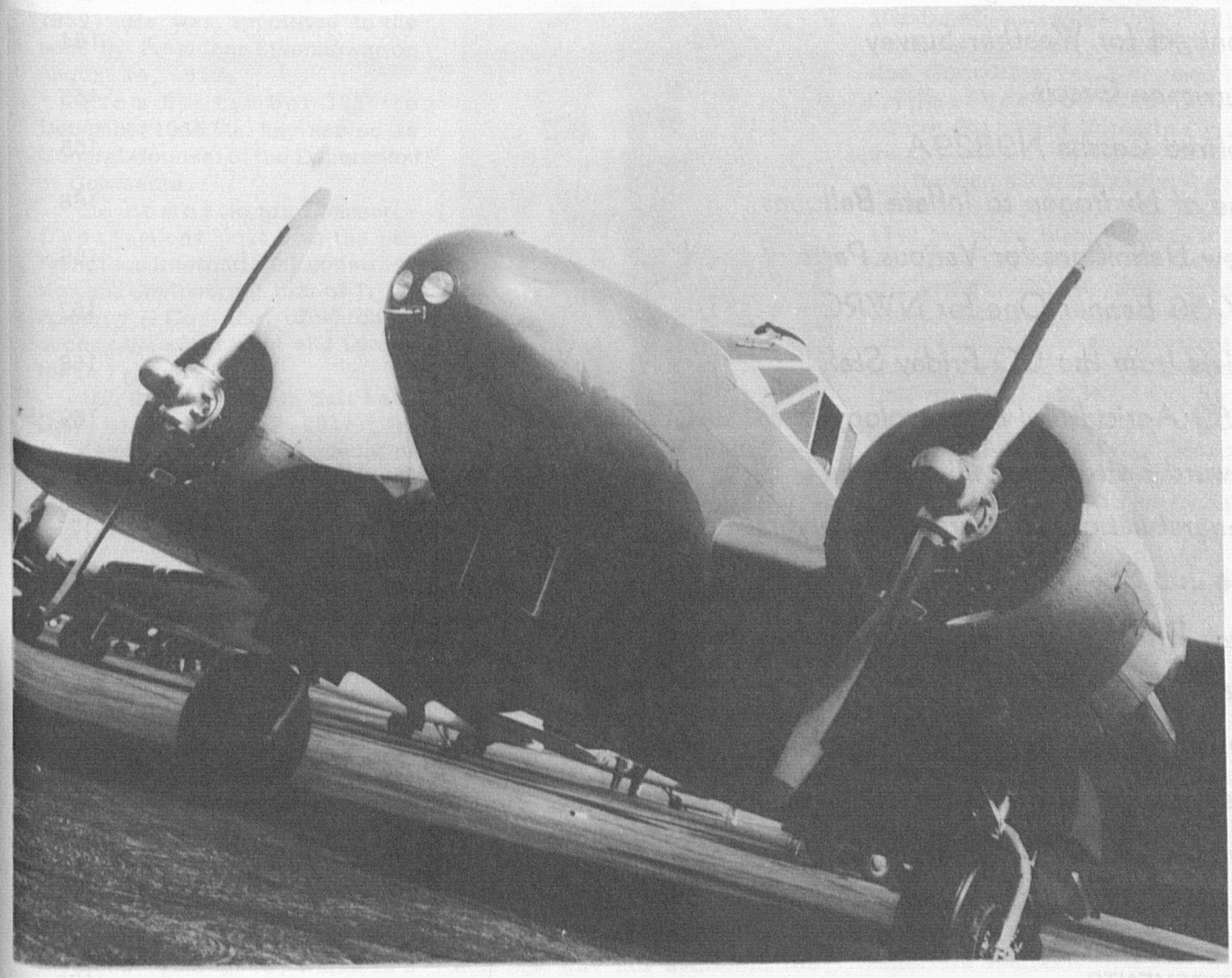

New WB Airplane O (For story see page 165.)

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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.

UNDER SECRETARY OF COMMERCE

Philip A. Ray

SECRETARY OF COMMERCE Frederick H. Mueller administered the oath of office to Philip A. Ray of Hillsborough, San Mateo, California, as the Under Secretary of Commerce on September 25, 1959. He was appointed to the post by President Eisenhower on August 14, 1959.

From September 1954 to December 1956 Mr. Ray served as General Counsel of the Department of Commerce.

He comes to his Commerce Department post from the San Francisco international construction and engineering firm of J. H. Pomeroy & Co., Inc. of which he became Vice President and Director in February 1958.

Mr. Ray was born in Salt Lake City, Utah on May 27, 1911. He received his preparatory education at the University of Utah and Stanford University, receiving his Bachelor of Arts Degree from the latter in 1932. He obtained his Law Degree from the Stanford Law School in 1935.

During World War II, Mr. Ray

served as a combat intelligence officer in the U. S. Navy, and was awarded the Bronze Star at Leyte.

Mr. Ray is a member of the State Bar of California, the Bar Association of San Francisco, the American Bar Association, the Federal Bar Association, the American Law Institute and the Maritime Law Association. He is currently a member of the Executive Committee and Chairman of the Finance Committee, World Affairs Council of Northern California.

He was admitted to the California Bar in 1935. From 1935 to 1942 he was a legal associate in the San Francisco law firm of McCutchen, Olney, Mannon and Green; partner, successor law firm, McCutchen, Thomas, Matthew, Griffiths & Greene, 1946 to August 31, 1954 and January 1957 to February 1958.

In 1935 Mr. Ray married Denece Sanford of Salt Lake City. The family home is in Hillsborough, San Mateo, California.

Forecast Services for Khrushchev Flights

THE visit of Premier Khrushchev to the United States provided the Weather Bureau an excellent opportunity to demonstrate its high altitude flight forecast service to our Russian visitors. Service was provided for a total of 16 Atlantic crossings during the period from September 11 through September 30. Three types of aircraft were involved: one IL 18, which is a medium-weight turbo-prop aircraft; five TU 104 large jet aircraft, and two TU 114 turbo-prop aircraft. The latter type aircraft was used by Premier Khrushchev himself, the second TU 114 being a standby for the other. Two flights flew in from Moscow in advance of Premier Khrushchev's flight. During Premier Khrushchev's stay in the U. S. there were four round trip TU 104 flights which served as courier flights between Moscow and Washington.

Services provided for the North Atlantic crossings were furnished by the Idlewild office in accordance with international procedures. Since these were special flights involving routes for which an exchange of forecasts with Moscow was not available routinely a heavy volume of message transmissions by Idlewild to Moscow MET was required. This amounted to about 600 meteorological messages during the 20-day period. Some of the flight forecast information was needed as much as 48 hours in advance and to help with this phase special arrangements were made with JNWP at Suitland to provide 48-hour 300 millibar barotropic numerical progs. These were provided on a daily basis.

For the eastbound flights, considerable team work was required on the part of Idlewild, NAWAC, WBAS Washington, and Andrews AFB. Service for these flights was made up of the flight documentation and briefing materials available from Idlewild on the high altitude facsimile circuit augmented by route winds and temperatures furnished by WBAS Washington for flight altitudes at 8, 9, 10, and 11 kilometers. These materials were assembled at NAWAC in flight forecast folder form in accordance with international procedures, then sent by messenger to Andrews AFB where the Base Weather Station person-

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nel performed the actual flight crew briefings. This was necessary because Andrews AFB was the only available jet terminal in the Washington area, and the fact that the flight crews were quartered at the Andrews AFB during the period of their stay in Washington.

The flight to the West Coast made by Premier Khrushchev utilized Air Force jet aircraft. Here again, the forecast services were for the most part made available from the high altitude facsimile circuit. Flight crews were briefed in turn by the Weather stations at Andrews AFB, San Francisco, Des Moines, and Pittsburgh.

Dr. Pcherpchelko of the Soviet Hydrologic Meteorological Service accompanied one of the first courier flights and served as Meteorological Consultant to the flight crews. While in Washington he visited the National Meteorological Center at Suitland on two occasions in order to learn more about the techniques employed in JNWP, NAWAC, and Extended Forecasting.

Although there were many adjustments in working schedules and checking flight times, messenger services, and minor emergencies that are bound to arise in connection with special flights of this nature, the entire operation worked quite smoothly and effectively. There is every reason to believe that the Russian flight crews and accompanying officials were favorably impressed with the quality of the meteorological services provided by our offices. All participants are congratulated on the excellence of their work.

Change in Correspondence Course Rates

THE Pennsylvania State University has increased its fees for Correspondence Courses from $13 per credit to $15 per credit, effective September 1, 1959. All those who have such study approved at Government expense are authorized the increased rate.

Central Office Assignments

Deputy Chief of Bureau

ON August 10, 1959 James W. Osmun was appointed as Deputy Chief of Bureau. For a resume of Mr. Osmun's career, see TOPICS January 1957 and February 1959. Since his assignment to the Central Office in January 1959, Mr. Osmun has served as Director, Aviation Weather Services and as Acting Deputy Chief of Bureau.

Associate Chief of Bureau–Aviation

RECENTLY Mr. N.A. Lieurance returned to the Weather Bureau to head up the Bureau's aviation program after a year's assignment with the FAA. Mr. Lieurance will fill a new position as Associate Chief of Bureau—Aviation.

Special Assistant to the Chief

Paul H. Kutschenreuter has returned to the Central Office as Special Assistant to the Chief of Bureau following a year of graduate study in meteorology at Rutgers University. While at Rutgers Mr. Kutschenreuter was engaged in research involving considerable computer work and was awarded an M.S. Degree in Meteorology.

Contract for Weather Survey

THE advent of commercial high performance aircraft, increased air traffic, complexity and rapid growth of the national system of air navigation and air traffic control necessitates an immediate determination of aviation meteorological requirements and problem areas associated with management of the navigable airspace. To this end, the current and anticipated requirements for meteorological services of individual pilots and all groups associated with aircraft operations within the United States must be collected and analyzed.

The Federal Aviation Agency recently awarded a contract to the Borg Warner Corporation of Chicago, Illinois, to make a two-year study of the information needed to satisfy aviation weather services for the next 15 years. Borg Warner is specifically responsible for these tasks:

1. Determination of the requirements for meteorological service to support air navigation and air traffic management operations through 1975.

2. Determination of the use and adequacy of meteorological information to support current air navigation and air traffic management operations.

3. Delineation of the progressive changes in meteorological service necessary to meet requirements.

4. Determination of the meteorological research and development necessary to meet requirements.

Data derived from the study will be used not only for FAA's long range plans but will also be put into use by operating bureaus of the FAA. The Weather Bureau and the military weather services will also make use of this study.

A composite team representing the Federal Aviation Agency, the Army, Navy, Air Force, and the Weather Bureau participated in evaluating the bids from 16 companies. This comprehensive project is needed to determine the type and amount of aviation weather information required to cope with increasing speed and complexity of air traffic.

Information will be collected from some 140 installations including, in addition to the Weather Bureau offices, commercial air carriers; Army, Navy, and Air Force commands; and a variety of general aviation organizations. The program will not deal with aviation meteorological requirements peculiar to air warfare.

Hurricane Gracie

THE following editorial appeared in the New York Times on October 1, 1959 and it is reproduced with their permission.

"That only three people were killed directly by Hurricane Gracie when it overwhelmed the South Carolina coast is a truly fabulous example of how well human beings can now cope with the rampaging forces of nature.

"Mankind is still far from being able to control the formation and course of the hurricanes that have harried the East and Gulf Coasts and the West Indies since before history was written. Scientists don't yet know nearly enough about the forces that determine them. But research and study are adding knowledge fast—and putting it to work in prediction and protection.

"Good forecasting by the Weather Bureau, its superlative system of alerts and warnings to the public, in which the press and broadcasting companies gave signal cooperation, and the operations of civil defense agencies, the Red Cross, the National Guard and the police—to all of these thousands of people should be deeply thankful, thankful that they are still alive and that their property is damaged far less than it otherwise would have been. And the rest of us coast dwellers should be glad to be so well guarded against hurricanes to come—including Hannah, now looming far to eastward.

"Gracie gave the hurricane preparedness agencies an exacting test, both through the terrific punch it developed and by its erratic behavior. For six days it churned around rather aimlessly far off the Florida coast, and decreased in power. Suddenly, instead of going north as so many storms have done, it turned sharply westward during Sunday night and early Monday morning, gathering strength until it hit Charleston, at mid-day Tuesday, with the highest winds since those of Hazel five years ago.

"As soon as the Weather Bureau's continuing and vastly improved observation facilities had conclusively recorded the shift—at 11 A.M. Monday—the bureau proclaimed its 'hurricane watch' in the threatened area, followed in the early afternoon by urgent 'emergency hurricane warnings' which accurately predicted both the strength of the storm and its direction. By midnight practically all those in the dangerous areas had been evacuated, temporary shelters provided them and threatened property given whatever protection was possible. The test of Gracie had been met—and with great distinction."

Retired Cessna N9829A

THE Weather Bureau Cessna entered on duty for the Weather Bureau on April 26, 1950, to assist in the aviation inspection program. The aircraft has also been used extensively for familiarization by aviation forecasting personnel. On September 14,

George Brewster (WB Pilot) inspects new airplane.

1959, it was retired from service.

During this tour of duty of almost nine and a half years, it made several trips to each of the 48 States and, in June of 1959, made a trip to the 49th State.

Total aircraft time of 3,432.1 hours was logged for an estimated mileage of 466,167.5 miles. A total of about 3,700 take-offs and landings were made. The airplane was in the air on 1,123 days of the approximate 3,430 days the aircraft was on the Weather Bureau rolls.

During the time 9829A was in the Weather Bureau, four different engines were used. The aircraft had a few unscheduled emergency landings at en route airports and had one forced landing, due to icing, in a field about 50 miles east of Denver.

It is hard to see 9829A go as it has become an institution, especially to the field stations. However, it has been replaced by a bigger and better aircraft, N122G.

The new airplane is a twin-engine Beechcraft obtained from the Air Force in January of this year. In the Air Force this type and model is known as a C-45H.

The plane was given a 1,000-hour check and modified to meet FAA certification standards. Since most of the radio equipment had been removed before transfer to the Weather Bureau, a complete new communications and navigation system was installed. The primary components are a 360-channel transceiver, dual omni, and one ADF.

The interior was completely sound-proofed and recovered. The interior colors are a combination of off-white and gray with a bluish gray rug on the floor. The cabin configuration permits a maximum of six passengers in the cabin plus the two seats in the cockpit.

The exterior has been painted a combination of white and pacific blue. The white is on the top of the fuselage to keep the heating effects of the sun to a minimum. Practically all the rest of the aircraft is a deep blue with the registration numbers thereon in white.

Use of Hydrogen to Inflate Balloons

DWINDLING supplies of helium from natural sources may force the United States to resort to hydrogen as the gas for inflating meteorological balloons. Since the United States is the only country having helium in large quantities, most national meteorological services have always used hydrogen. In fact, prior to July 1, 1938, the Weather Bureau also used hydrogen for this purpose. Effective on that date, selected stations were authorized to switch to helium. Because of its safety factor, the use of helium expanded rapidly until today only a few Arctic stations and those in the Antarctic use hydrogen. The rate of increase is shown in the following table:

Year	Millions of Cubic Feet
1940	3.0
1945	8.0
1950	12.9
1955	11.4
1959	20.0 (estimated)

From 1948 to 1956 there was little change in the rate of consumption of helium. From 1956 to the present time the rate has increased rather rapidly owing to the IGY program, stations taken over from the military, larger balloons, intermediate rawinsondes at selected stations, etc.

Concurrent with our large increase in the use of helium has been a tremendous increase in the use of this valuable gas for military and commercial operations. It is important in atomic work, aluminum welding, in hospital cases involving breathing difficulties, and in many other types of work.

As an economy measure, the Weather Bureau completed arrangements in 1947 to obtain some of its helium from Navy sources. The Navy obtains its helium from the Bureau of Mines, but by shipping it in tank cars, a sizeable savings in transportation cost can be effected. The increased cost of the helium obtained by the Weather Bureau from Navy sources is more than offset by the reduction in transportation costs.

By switching to hydrogen, it would be possible to generate the gas on station using low-pressure generators, or procure it commercially from some nearby source. This would effect a major savings in transportation costs.

Hydrogen is an explosive gas but with proper precaution and handling the risk can be reduced to a minimum. Where local ordinances do not prohibit the storage and use of hydrogen near airports, it would be possible to take certain safety measures which would greatly reduce the hazard; e.g., adequate training to impress upon observers the need of safety, explosion-proof electrical switches in inflation shelters, remote heating plants for inflation shelters, proper grounding of inflation equipment, etc. The fact that other countries have used hydrogen so successfully for years indicates that the Weather Bureau too could use it if conditions made it necessary.

New Definitions for Various Parts of the U. S.

IN order to simplify the writing of instructions and to make the meaning of these instructions sufficiently clear, the following definitions should be used by the Weather Bureau until such time as other official Government designations are made.

"Contiguous U.S." - The 48 states.

"Continental U.S." - The 49 states including Alaska.

"The U.S." - The 50 states including Alaska and Hawaii.

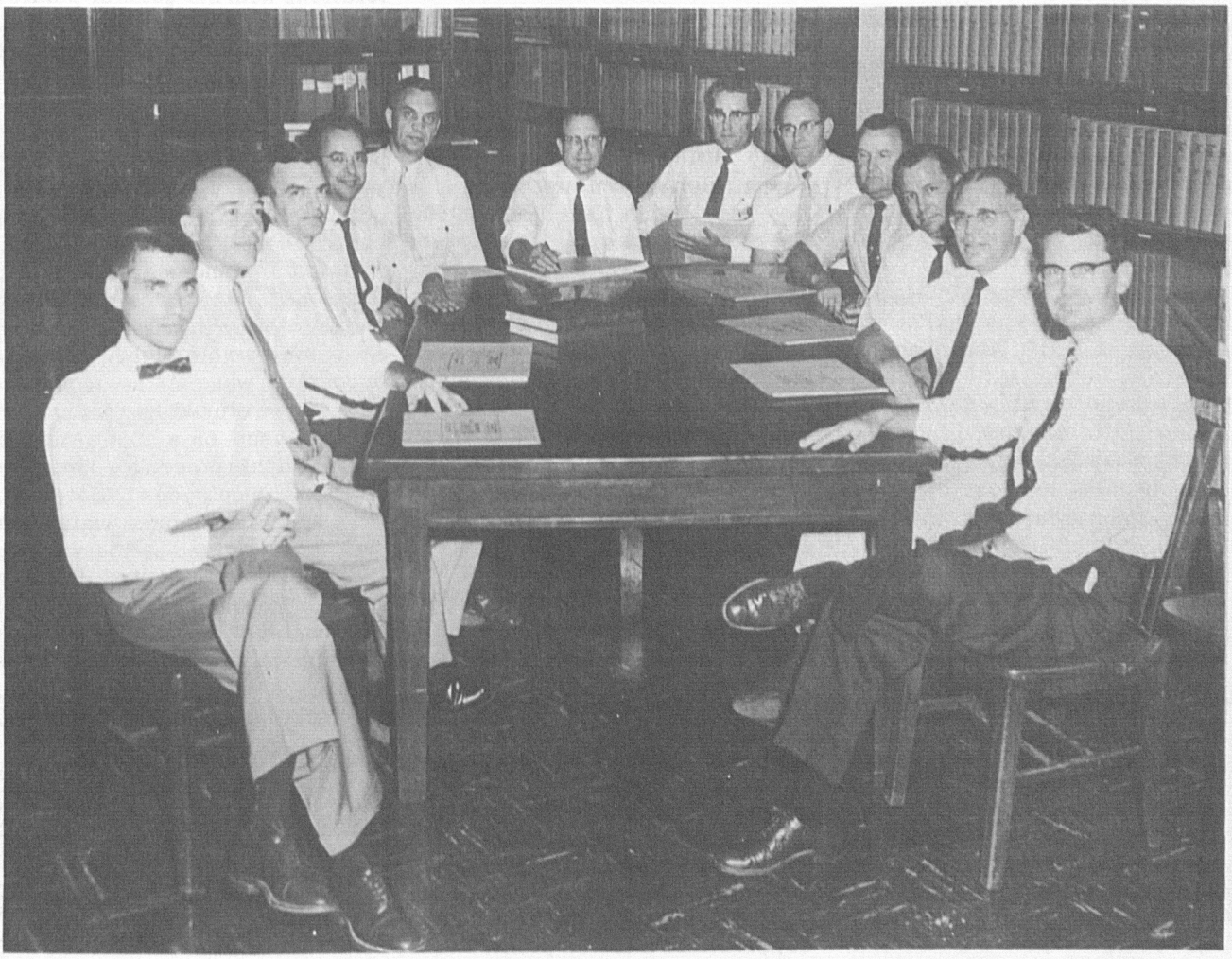
FY-59 Banner One for NWRC

FISCAL year 1959 was a singular one for the National Weather Records Center at Asheville, North Carolina. During the 12-month period several large reimbursable projects for new customers were undertaken, work for several long-standing ones was expanded, and activities for the Weather Bureau continued near the level of the preceding year. As a result, and for the first time in its history, the value of the work performed in 12 months by the Center exceeded two million dollars, reaching a total of $2,244,526.

In the 12 months, the number of employees in the Center advanced from 282 to 402. This was an increase of over 40 percent and, for the first time, the total employment of NWRC exceeded 400.

Some of the special projects performed at the NWRC during the past several months include:

1. Preparation of a Climatological and Oceanographic Atlas for Mariners, Volume I, North Atlantic Ocean. This Atlas is an adapted version of the Navy Climatic Atlas for operational maritime problems for both the



NWRC Staff Heads Meet to Discuss Progress on Current Projects and Plan New Ones. Left to right—William M. McMurray, Chief-Synoptic Climatology Section; Dick M. Whiting, Acting Chief-Project Coordination Unit; Norman L. Canfield, Chief-Climatic Analysis Section; Raymond L. Joiner, Chief-Staff for Computer Utilization; A. Ben Elam, Chief-Climatography Section; Roy L. Fox, Director; Harold L. Crutcher, Chief-Technical Advisory Staff; Henry L. Bent, Chief-Data Reduction Section; Leland W. Mosedale, Personnel Officer; Milton G. Johnson, Chief-Administrative Services Section; Sherman M. Brewster, Chief-Climatic Information and Reference Section; and Dr. Gerald L. Barger, Deputy Director.

atmosphere and hydrosphere.

2. The power spectrum analysis test project. This is a new technique for testing a time series to uncover statistically any inherent tendencies for cyclical behavior. It was used in testing the climatological record of temperature and precipitation at Woodstock, Maryland.

3. A climatological study for Civil Defense purposes. This involves summarization of upper air wind values (speed and direction) for construction of climatological patterns to be used as guides in extrapolation of winds to designated levels.

4. Refractive index jobs for the Bureau of Standards and for the Navy. This was a study of the density discontinuities in the lower levels of the atmosphere for the purposes of understanding and predicting the propagation of radio waves.

5. Evaluation of aircraft in-flight reports. This is an attempt on the part of WMO (World Meteorological Organization) and ICAO (International Civil Aviation Organization) to determine the best way of summarizing data obtained from aircraft in flight in those remote areas where conventional observations are limited.

6. An 11-year summary of sea surface temperature data in the Pacific for the Fish and Wildlife Service and a study of sea surface temperatures and wind speeds at selected locations for Woods Hole Oceanographic Institution.

7. Development of upper air statistical techniques for Redstone Arsenal for satellite and rocket studies.

8. Summaries of low ceiling-visibility wind data for several locations in connection with instrument landing studies for aircraft.

9. Basic work on the St. Lawrence Seaway Project. This included preparation of data for Technical Paper No. 35, "Climatology and Weather Services of the St. Lawrence Seaway and Great Lakes," a publication intended to familiarize all concerned with weather conditions and available weather services in the area.

10. A summary of temperature and wet bulb data for selected foreign cities for the International Cooperation Administration.

Even though fiscal year 1959 was a productive one, fiscal year 1960 promises to be an even busier one for the NWRC. New requirements have been placed on it and indications are that over 420 personnel will be employed by June 1960 and that the total value of the work performed by the Center during FY-60 for private industry, for educational institutions and for state and other Federal agencies will approximate the 2 million dollar mark, all of which will be performed on a reimbursable basis. In addition the Center will continue to perform its usual services for which the Bureau is responsible. The dollar value of this is about $750,000.

Briefs from the CO Friday Staff Conferences

Integration of Research and Results. At a recent staff meeting Mr. Vernon briefly reviewed the J. J. George report on "Further Studies in the Development of Short Range Weather Prediction Techniques." In the ensuing discussion, participated in by representatives from the MIC Conference, it was emphasized that there is an urgent need for more thorough procedures whereby results of research efforts are evaluated from the standpoint of possible integration into day-to-day practices. It was pointed out that there are only 100 copies of Mr. George's report in circulation since this was done under a Department of Defense contract which indicates that it has not been seen by the vast majority of our practicing forecasters. Suggestions followed on the best method of "proving-out" techniques, ranging from testing at selected stations to establishment of a model forecasting station expressly for this purpose. Dr. Wexler stated that he has initiated a proposal which is in routing to several interested individuals and he will report more fully at a subsequent meeting.

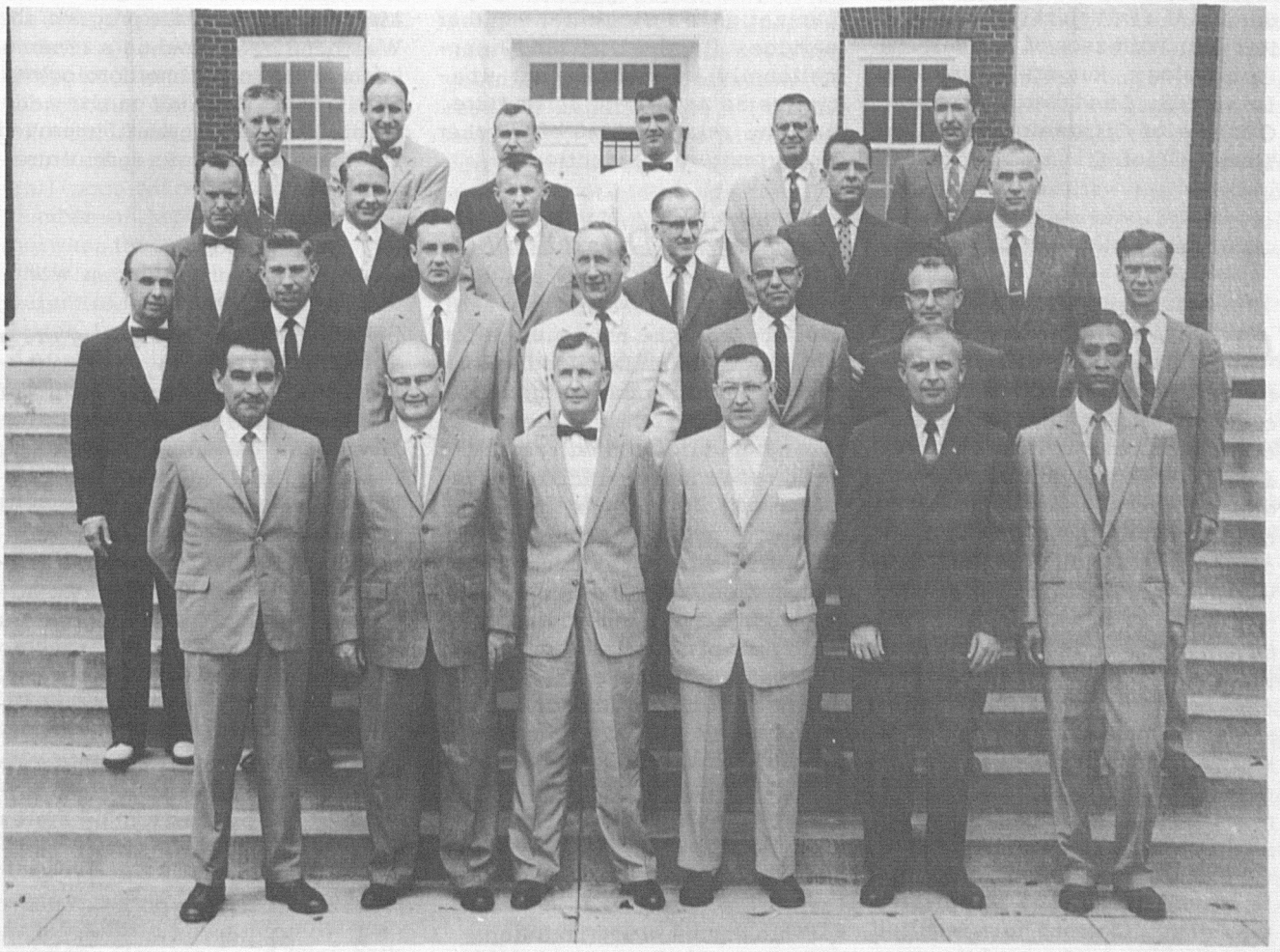
Tape Recorders on Briefing Phones. During the past several months there have been a few instances reported of phone conversations resulting in poor public relations with the general public. As a result the suggestion had been received that tape recorders be installed on briefing phones in an effort to find the best procedures. It is recognized that telephone conversations between Weather Bureau employees and the public are in general excellent, but the fact remains that even isolated instances of bad public relations tend to place the Bureau and the station in an embarrassing and unfavorable light. Another suggestion was that the recordings might serve a useful training purpose if used on a spot sampling basis and this procedure announced to the employees. However, the general consensus, which was strongly supported by the visiting field officials, was that this is a problem for resolution at the local station level and that if the stations were informed of these instances of poor public relations, the employees themselves would find means for improvement.

House Survey Team. At the September 25th staff conference, Dr. Reichelderfer introduced Messrs. Turner and Gasso, staff members of the House of Representatives Appropriations Committee, who will continue the review of Weather Bureau activities and programs initiated last year. It was emphasized that the Bureau would do everything possible to insure that the Survey Team receives all of the facts necessary to conduct their study.

1959 Agricultural Meteorology Institute Completed

THE fourth annual seven-week Agricultural Meteorology Institute was concluded on August 14 by a luncheon at which Dr. Reichelderfer addressed the group and Dr. G. M. Cairns, Dean of Agriculture of the University of Maryland, presented certificates of completion. This was the fourth annual institute jointly conducted by the Weather Bureau and the University of Maryland. In addition to the 25 participants shown in the group photograph, the final three week portion of the institute was attended by John Purvis, MIC at Columbia, South Carolina, D. W. Krueger, Fire-Weather Research Meteorologist at Macon, Georgia, and Earnest Rodney of the F&SR Division.

The first four weeks of the Agricultural Meteorology Institute were conducted at the College of Agriculture of the University of Maryland. The purpose of this portion was to provide a general background in agricultural technology, familiarity with the language of agriculturists, and a passing acquaintance with the influences of weather on plants, animals, insects, plant diseases,



Left to right—Mario Navarete, Chile; Gilbert Sternes, Oregon; A.C. Webb, Texas; Donald Close, Pennsylvania; Ceel Van Den Brink, Iowa; Chucheap Singhachan, Thailand. Second Row—William L. Denmark, Missouri; Paul A. Mott, Fla.; Jose Martinoli, Argentina; Larry Mayne, Texas; Ernest B. Williams, Michigan; Clarence L. Kibler, Washington, D.C.; Elmer R. Nelson, Va. Third Row—Melvin A. Johnson, Washington, D.C.; Leland D. Wilkins, California; Curtis W. Crockett, Washington, D.C.; E. J. Saltsman, Washington, D.C.; Charles B. Carney, North Carolina; R. C. Baskin, Missouri. Fourth Row-Ellis D. Pike, Kansas; A. Delbert Peterson, Washington, D.C.; H. S. Carter, Georgia; J.A. Wallace, Washington, D.C.; Ray F. Randall, California; J. F. Feeley, New York.

soils, and management of farm enterprizes. Instruction at the campus was by staff members of the College of Agriculture. In addition to the formal instruction there were field trips to the U.S.D.A. Experimental farms and laboratories at Beltsville and to the University of Maryland Tobacco farm.

The Institute's final three weeks were conducted at the National Meteorological Center under a staff of instructors including James E. Newman, Professor of Agricultural Climatology, Purdue University; A. Vaughn Havens, Professor of Agricultural Climatology, Rutgers University; Dr. H. E. Landsberg, Director, Office of Climatology; H.C.S. Thom, Chief Climatologist, U.S.W.B.; Donald P. Springer, Agricultural Meteorologist, F&SR; Marvin D. Magnuson, Northwestern Area Climatologist; Roger Allen, Chief, Short Range Forecast Development Section; Wayne Palmer, Chief, Bioclimatology Section; Milton L. Blanc, Chief, Investigations Branch, Office of Climatology, and Harry L. Swift, Fruit-Frost and Fire-Weather Specialist, F&SR. This portion of the Institute dealt with micrometeorology, climatological and forecasting services for agriculture, phenological studies, organization of agricultural weather services (in the U.S. and internationally), climatological statistics as applied to agriculture, and the relationships of weather to agricultural production.

Many of the participants in this institute are presently in field positions where the training can be put to immediate use in Weather Bureau services to agriculture. For example, the fruit-frost services in California, Florida, Brownsville, Texas, and Benton Harbor, Michigan were represented and three state climatologists, two MIC's from local offices serving agricultural areas, and several forecasters serving agriculture and the general public also attended.

As a result of the Agricultural Meteorology Institute program, the Weather Bureau now has a reserve of more than 40 meteorologists with this training that can be made available for a program of improved weather services to agriculture.

Toward Better Data Distribution

CONSTANT internal review of publications, recommendations of users, and anticipation of needs of potential users of climatological publications results in better and faster data distribution to a larger number of customers. Although there are many users of climatological data who need the same data each day, month or year, there are many others in new and rapidly expanding fields who need specialized data or new combinations of elements to meet their needs. Furthermore, new means of presentation or elimination of duplications represents considerable savings in preparation of copy and printing.

Recent changes in climatological publications have resulted from user need. Some of the more important improvements are listed below:

1. Storm Data - Effective with the January 1959 issue, the table "Storm Data and Unusual Weather Phenomena" was removed from the Climatological Data, National Summary. This table is now carried in the new publication entitled STORM DATA. Discontinuance of this table in the CDNS will result in its earlier issuance. The new publication will meet the needs of a small specialized group of users.

2. Monthly Weather Charts - Effective with the January 1959 issue, the 17 climatological charts formerly printed in multiple colors at the end of Climatological Data, National Summary are printed in black ink only. These charts are no longer published in the MONTHLY WEATHER REVIEW.

3. Climatological Substation Summaries (Reference August 1955 TOPICS, Volume 14, Number 7) - To date 222 of these summaries have been published. They are a valuable addition to our climatological files. Local Chambers of Commerce and trade organization have been excellent cooperators in this project, and other groups - state agencies, universities, and colleges, and public utility corporations - have cooperated generally on a large scale. An advantage gained from cooperators such as the latter is that they do not limit themselves to one locality since their interests are usually statewide.

Twenty-seven states have thus far contributed to this program. A breakdown by states follows:

Alaska	15	Louisiana	1	Oklahoma	9
Arkansas	6	Michigan	19	Oregon	13
California	8	Minnesota	3	Pennsylvania	1
Colorado	6	Mississippi	2	South Carolina	18
Florida	6	Montana	8	Tennessee	2
Georgia	30	New Mexico	5	Texas	6
Illinois	3	New York	5	Utah	19
Indiana	8	North Carolina	10	Washington	6
Iowa	3	Ohio	8	Wyoming	2

Copies of these substation summaries may be obtained from the appropriate State Climatologists, but only in very limited quantity.

4. Climates of the States - These brochures, one for each state, will be valuable reference material for all those interested in the climate of the United States, and Puerto Rico. The Yearbook of Agriculture 1941 "Climate and Man" is out of date. These pamphlets are intended to provide a modern source of data. Each issue carries a textual summary on the climate of that state, and many supplementary climatic details in the form of tables and charts. The tables include "Freeze Data," which list mean dates of the last Spring and first Fall occurrences, and the mean number of days (growing season) between these dates. Other tables show monthly and annual mean values of temperature and precipitation for many stations. More detailed tables show normals, means, and extreme values of other important surface meteorological elements for those locations within the state which have first order Weather Bureau stations.

Charts showing the mean maximum and mean minimum temperatures for January and for July, and a mean annual precipitation chart for the state, are included in each issue. Another chart showing the number of times destruction was caused by tropical storms over the period 1901-1955 is included in the issues for coastal and bordering states along the Gulf and North Atlantic.

To date (August 30, 1959), the issues for Alabama, Arkansas, Florida, Georgia, and Iowa have been published. The issues for Alaska, Illinois, Kentucky, and Michigan are at the printers. Present status of this project indicates that most issues will be published before the end of FY 1960.

5. Weather Stories in Climatological Data - The comprehensive narrative weather story formerly carried in each issue of this publication was discontinued with the January 1958 issue. A narrative text is now carried only upon the occasion of unusual and outstanding weather events.

6. Bulletin W Supplement 1931-52 (Ref. September 1958 TOPICS, Volume 17, November 9) - Publication is completed for all state issues except Hawaii. The Puerto Rico and Virgin Islands issue is now at the printers, and the Hawaiian issue is rapidly nearing completion.

Congratulations to Aurora Observers!

WE doubt that there is a Weather Bureau station not involved in some sort of a cooperative project with some other government agency or scientific research organization. For the most part, these are highly important tasks, which at least have promise of aiding in scientific progress or which aid in providing essential services to the public; most of them, however, are thankless tasks in that they go on year after year with no direct proof to the station of the value of the project.

While we would not claim that the data given in the following NEWS LETTER from the Auroral Data Center at Cornell University (reprinted with their permission) indicate a major scientific breakthrough in itself, it is the building of fact upon fact such as this that does lead to a breakthrough.

"We have recently finished studying the IGY aurora reports to see how the aurora moves. The reports from the Weather Bureau stations are especially valuable, probably because they are used to measuring the motion of clouds. Anyway, they have given us a large number of observations.

"The Weather Bureau reports on IBM cards can indicate motion to the East, motion to the West, random motion, reversed motion, and no motion at all. Since we get about 18,000 hourly reports a month, it would be a long job to study the motion if the reports were not handled by the machines. Even so, it is not easy. The reports from the volunteer observers have also been examined, along with the All-Sky films, but most of the data are taken from the Weather Bureau.

"There are two questions we wanted the answers to:

1. Is there any motion from East to West (like the sun and stars) which we would sort of expect for an aurora hooked to the sun?

2. Does the aurora change its motion at midnight?

"Actually, most of you have observed long enough to know that most auroras do not move toward the west and that at least some of them don't change their motion, if any, at midnight, but there are a lot of people who write about auroras who don't know this. So we wanted to analyze the reports and study this. The results surprised us. We have drawn a couple of graphs, showing the ratio of reports of motion to the east to reports of motion to the west for each hour of the night and for different longitudes. The thing we did not expect was the excess of motion to the east. It is quite definite at most hours and at most longitudes, especially in the central United States, from 90 to 110W. So again you have produced the answers to questions which have been asked for years.

1. The predominant average motion of auroras is toward the east, in the direction opposite to that of the sun and stars.

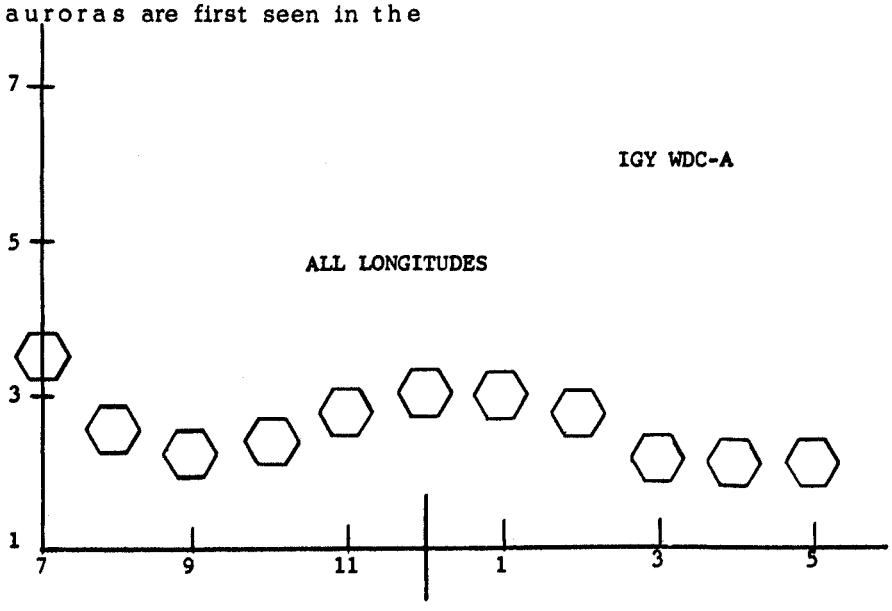
2. Although the average motion of an aurora depends on

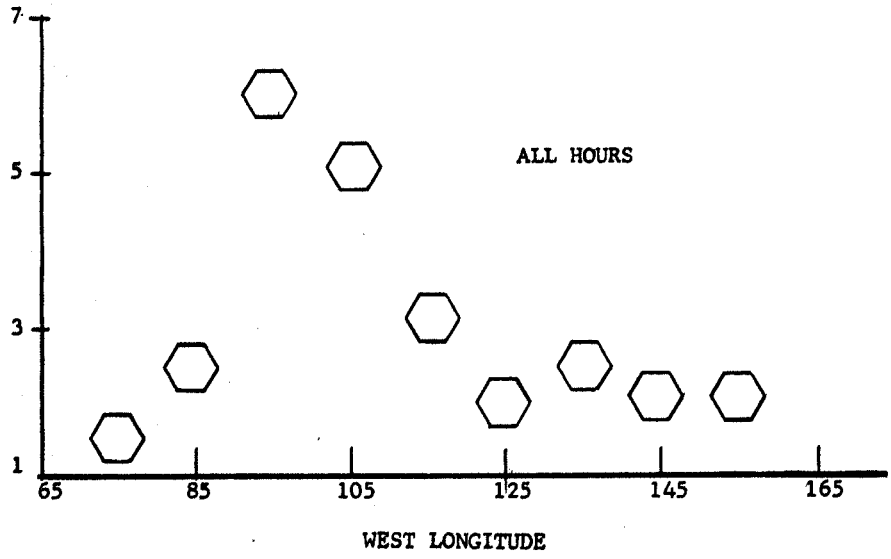
the time, there is no reversal at midnight.

"There are as many reports of random motion as there are of eastward motion, and this is in agreement with our own experience. Generally there is no impression of motion of an aurora, for about half or two thirds of the auroras seen. Only about one aurora out of 10 seems to be all moving in the same direction.

"Recently, while working on some reports from the western United States we noticed that auroras are first seen in the Northeast. This agrees with the isochasms we showed you in a previous letter, and we decided to ask you to do us a favor. Next time you send in a report will you mark on it the direction in which you first see or expect to see an aurora? We will plot them on a map and be very pleased. If you can measure the direction in degrees east or west of north, that would be especially useful."

Dr. C. W. Gartlein
U.S. Aurora Reporter
Cornell University





The Job Sheet Problem

YOUR job sheet is an important document to you. It is actually the basis for determining your pay and the kind of job that you have. The determination of these two facts about your job is officially called "the allocation of your position."

Positions are allocated by comparing the duties, responsibilities, and required qualifications with pre-established "standards." (There are other methods of classifying jobs, but this is the one prescribed by law for most Weather Bureau positions.) In this comparison, the job sheet serves as the "proxy" for the position. Now if your job sheet serves this purpose, it should contain or refer to everything about the job that must be known to correctly allocate it. Anything else is surplus and serves no useful purpose.

Simply stated, a job sheet should be truthful, brief, and "plain spoken." Any deviation from these characteristics in the end works against the man who fills the position. Let us see why this is true:

If the job sheet is inaccurate or infers an untruth, the incumbent's pay is based on something that simply isn't so. When this situation is found on Civil Service audit, the Commission redetermines the grade for the Bureau, usually to the employee's disadvantage.

If the job sheet is unnecessarily long and contains material that does not affect the allocation there are several results. The sheet is costly to prepare, to review, and to classify. It has the same psychological effect on the reader as a long-winded verbose speaker - it bores. More important, the extraneous material deemphasizes more important facts and may lead the reader to wrong conclusions.

If the job sheet contains words

with very broad meanings, it fails to provide the reader with a clear understanding of what the job involves. General words similar to "prepare," "handle," "responsible," etc., are not definitive and should not be used. Contrary to popular opinion, the use of stilted words and phrases adds nothing to the job sheet and should be avoided.

Our files contain many job sheets which suffer, to varying degrees, from these faults. Each year, a certain number of Bureau employees receive official notification that the Civil Service Commission has reviewed their job sheets and either cannot understand why the Bureau allocated them to their grade or that they do not feel that the grades assigned are proper. A few of these employees must eventually be downgraded or reassigned in spite of everything that the Weather Bureau can do. Every case questioned by the Commission is costly. Naturally it causes the employee understandable worry and concern over possible loss of pay and status. This in turn results in loss of morale, productivity, and effectiveness. To the Weather Bureau it represents a considerable cost in manpower which in the end only maintains the status quo. (A single case recently involved over 50 hours of Bureau manpower and the case is still in the balance.)

We are concerned over this ill-afforded cost and want to reduce it to a minimum. It is a job that can only be done through the cooperative effort of employees, supervisors, and personnel technicians. You can start by critically examining your own job sheet.

As the basis for the grade and series assigned to your position, your job sheet should answer the following questions:

1. What duties are performed on a continuing basis and what knowledge is necessary in their performance?

2. What responsibilities are vested in the position and to what degree?

3. What supervisory control is exercised over the position and to what extent?

4. What effect does the position have on the overall program objectives of the Bureau?

If your position description clearly reflects each of these items, its classification can be quickly determined on the basis of standards published by the CSC. If it is necessary to determine these elements by job or supervisory audit and consultation with program officials, the classification process is delayed.

The CSC conducts periodic inspections to determine if positions are correctly allocated. Their findings sometimes require correction of allocation (i.e., upgrade or downgrade) simply because the position is improperly described. Incumbents should therefore assure themselves that their descriptions clearly show significant duties, responsibilities and supervisory relationships. Terms used should be understandable to persons having a general familiarity with the activities, methods, practices, techniques and terminology of the occupation concerned. An average description should be about one and one-half pages and need not outline the entire program of the organizational unit since this information is normally available in organization charts or in the description of the supervisor's position. Conversely, the supervisor need not describe in detail the manner in which programs under his supervision are conducted if his subordinates' descriptions contain such information. An MIC's job sheet should emphasize supervisory, managerial, and leadership responsibilities and subordinate forecasters' sheets will cover the difficulty and complexity of the forecast problem. In this manner the job sheet of the subordinate is useful in describing the supervisor's position and job sheets can be appreciably shortened.

Keeping a description current is the responsibility of the employee and the annual position description reviews are designed as a reminder to the employee to carefully review his current position. Redescription of a position may be made at any time; however, it is necessary only when significant changes have occurred. Minor or incidental duties need not be entered on the description since, in most cases, the grade level and series will not be affected.

Our objective is position descriptions that are brief, clear and sufficiently documented to permit an accurate determination of grade and class.

New Director of Meteorological Service of Canada

ON September 25, 1959, Dr. Andrew Thomson retired as Director of the Meteorological Service of Canada after serving in this capacity since 1946. Dr. Thomson has had a distinguished career in meteorology ranging through the positions of Director of the Apia Observatory, Samoa; Associate Physicist, Department of Terrestrial Magnetism, Carnegie Institution; Chief Physicist, Meteorological Service of Canada; Assistant Controller and Controller (Director) of the Meteorological Service of Canada. Dr. Thomson in his capacity as Director and as President of Regional Association IV (North America) of the World Meteorological Organization has made many valuable contributions to the advancement of meteorology not only in Canada and the United States, but also in many other countries in America.

Mr. P. D. McTaggart-Cowan, who has been Associate Director for several years, has been appointed to succeed Dr. Thomson.

Map-Back Articles

DURING the past 15 months the frequency of special articles appearing on the back of the Washington Daily Weather Map has increased many-fold, and 35 map-backs have been published. These special articles are published for two specific purposes:

1. To aid in the understanding of the weather map and in the interpretation of the data on the map. This type of material includes climatic data, information regarding the observation networks, and explanatory material supplementary to the standard explanation which normally appears on the back of the map each Sunday. The articles are coordinated in the Forecasts and Synoptic Reports Division by Mrs. Louise S. Engel.

2. To illustrate specific uses of weather maps and forecasts in the field of applied meteorology. The assistance of field offices, and in some cases of persons outside the Bureau, is solicited in the preparation of articles on the practical application of weather maps and forecasts. In order that these articles may serve the intended purposes, the text should, so far as practicable, be of the character indicated in the four parts of the outline which follows:

a. A brief preliminary explanation of the connection between weather maps and forecasts and the activity to be discussed.

b. An explanation of how weather affects the operation in question, and a description of the special weather service which is required for the activity under discussion.

c. An example, if possible, describing a specific occurrence involving weather and an explanation of what was done by the Weather Bureau, with particular reference to the use of weather maps and forecasts.

d. When appropriate, a brief history of the weather service in this particular field of applied meteorology.

It is not necessary for field officials to write a finished article in order to contribute to the map-back series, although they have done this in many cases. In other cases, field officials have furnished the facts forming the basis for a map-back article.

The amount of text which can be used in one of the articles is, on the average, 1500 words or five pages of double-spaced typing. The layout is created in the Drafting Section of Administrative Operations Division by Albert M. Helwig acting as project leader for map-back illustrations.

Since January 1, 1959 the following map-back articles have been published:

January 15--Weather Bureau and the International Geophysical Year (Data from Office of Meteorological Research).

January 22--Winds Aloft Reporting Network in the United States (Data from Observations and Station Facilities Division).

January 23--Radiosonde and Rawinsonde Reporting Network in the United States (Data from Observations and Station Facilities Division).

February 20--Hydrologic Cycle (Data from Hydrologic Services Division).

February 25--These are Tornadoes (Data from Forecasts and Synoptic Reports Division).

February 26--Our Voluntary Weather Observers (Data from Office of Climatology). This map-back was read into the Congressional Record of March 2, 1959, pp. 2815 through 2818, by Senator Ervin of North Carolina.

March 3--Local Storm Warning Networks (Data from Synoptic Reports and Forecasts Division).

March 9--Tornado Forecasts and Weather Charts (Data from Synoptic Reports and Forecasts Division).

March 16--Ice Reporting on the Great Lakes (Data from Synoptic Reports and Forecasts Division).

March 17--Weather and Sheep (Data from WBAS Denver).

April 14--Growing Degree Days (Data from WBAS Green Bay, Wisconsin).

April 28--Weather and Plant Diseases (Data from Bureau of Plant Industry, Plant Disease Reporting Section, Crop Research Division, Beltsville, Maryland).

May 12--Tornadoes (Data from Synoptic Reports and Forecasts Division and Office of Climatology).

May 28--The World's Heaviest Rains (Data from Hydrologic Services Division).

July 8--The Structure of Fronts (Data from Synoptic Reports and Forecasts Division).

July 15--Rawinsonde Reporting Network in the United States (Data from Observations and Station Facilities Division).

July 16--Winds Aloft Reporting Network in the United States (Data from Observations and Station Facilities Division).

Forecasters' Forum

It may be a little surprising to some, as it has been to me, to realize how many field officials and public service units are still making a big play with statements like, "This year spring begins OFFICIALLY exactly at 2:55 AM Central Standard Time on March 21."

Never having seen this item discussed either "officially" or otherwise in WB directives or

correspondence, I thought it might be of interest to publish the following in "Forecasters' Forum." Perhaps we can clear the air slightly and possibly even get a bit of discussion.

Once more I have had occasion to hear a Weather Bureau official in a radio broadcast make reference to "the coming advent of summer which this year begins officially at 10:50 PM on Sunday, June 21." And once more I am constrained to remark, as I frequently have in the past, that the summer solstice does not mark the beginning of the summer season nor does the winter solstice have a specific connection with the start of winter, either officially or otherwise. While the quaint custom of marking the seasons of the year by these astronomical events has the sanction of tradition, this would seem insufficient reason for meteorologists to accept or to perpetuate a concept so unrealistic and inconvenient.

Others may argue that the entire concept of four rigidly or arbitrarily defined seasons of the year is unscientific and it is interesting to hear Prof. R. A. Bryson of the University of Wisconsin on this subject. However, the continued use of summer, fall, winter, and spring is justified until a more rational and more useful system can be fully worked out.

The logical division of the year into four equal length seasons is as follows: winter, December through February; spring, March through May; summer, June through August; autumn, September through November. This allows the winter and summer seasons to be about equally distributed around the yearly mean minimum and maximum temperatures in continental areas. The main advantage is that each season starts at the beginning of a month and the easy combination of monthly records suffices to yield the seasonal statistics.

This four-season system has been in use for quite some time in the national Weekly Weather & Crop Bulletin. For further reference please see J. B. Kincer writing on Page 690 of Climate & Man, 1941 Yearbook of USDA.

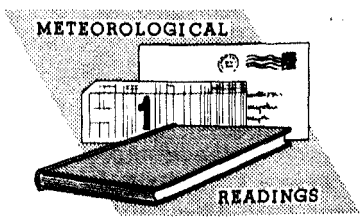
L. A. Joos
State Climatologist
Champaign, Illinois

The Future of Weather Forecasting

It is recommended that the attention of all U.S. Weather Bureau forecasters be called to the article entitled "The Future of Weather Forecasting" by R. C. Sutcliffe in the May 1959 issue of Weather.

It is believed desirable that once in a while all forecasters should take a little time to examine their occupation from a more or less detached perspective, if possible. Sutcliffe's article is in the nature of a philosophical dissertation and probably no one forecaster will agree with all of it. However, it is a most interesting and intelligent evaluation of weather forecasting ending with ideas by one of the most intelligent men in the profession concerning the future of weather forecasting. It is believed that this article should provide stimulation to all forecasters.

Gordon E. Dunn
District Meteorological Officer
Miami, Fla.



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information for participants, see TOPICS May 1957.

Assignment No. XXX: The Instability Line by J. R. Fulks on pages 647 through 652 of the Compendium of Meteorology.

About the Assignment: In this assignment we explore the synoptic and physical aspects of instability lines and study some of the theories which have been offered to explain how and why they form.

QUESTIONNAIRE

Col. 61 What is the International Meteorological Organization definition for an instability line?

1. Squall line along a cold front
2. non-frontal squall line
3. squall line along a warm front
4. all of the above

Col. 62 What is the convention regarding positioning instability lines on synoptic charts assuming the zone of instability is 40 miles wide?

1. Along the trailing edge
2. In the middle of the zone
3. Along the leading edge
4. 10 miles behind the leading edge

Col. 63 Harrison and Orendorff found what relationship between activity at a squall line and simultaneous activity at an accompanying cold front?

1. Intensifying squall line-intensifying cold front
2. Intensifying squall line-weakening cold front
3. Weakening squall line-weakening cold front
4. Weakening squall line-no change at cold front

Col. 64 The synoptic meteorologist is required to forecast which phase of the life cycle of

the instability line?

1. Inception and development
2. Individual characteristics
3. Time of dissipation
4. All of the above

Col. 65 In the typical case what is the distance between the surface cold front and its contemporary instability line?

1. 50 to 300 miles
2. 10 to 25 miles
3. 5 to 10 miles
4. Coincident with cold front

Col. 66 What is the usual length of a well-developed instability line as seen on the macroscale weather map?

1. 25 miles
2. 50 miles
3. 100 miles
4. several hundred miles

Col. 67 In the absence of frequent, closely spaced reports, what is a useful indicator of the presence of an instability line?

1. Warm air in advance of a cold front
2. Time, character and amount of rainfall
3. Cold air in advance of a cold front
4. Fracto cumulus clouds

Col. 68 How are instability lines oriented with respect to fronts?

1. Always parallel
2. May cross
3. Always at an acute angle
4. At right angles

Col. 69 What diminishes the usefulness of 3 hourly pressure tendencies for locating instability lines?

1. Steady rises
2. Lack of changes
3. Rapid fluctuations
4. Steady falls

Col. 70 What often happens to the surface temperature after the passage of an instability line in the early afternoon?

1. Falls
2. Does not change (remains steady)
3. Recovers or rises
4. Fluctuates in a random manner

Superior Accomplishment Awards

Irwin C. Blackberg	Meteorological Aid	Central Office
Marion A. Crosby	Clerk-Stenographer	NWRC Asheville
Howard H. Engelbrecht	State Climatologist	Baltimore
Marian I. Faber	Meteorological Aid	NWRC Asheville
Gilbert F. Grafton	Meteorologist	Los Angeles
Howard E. Graham	Meteorologist	Central Office
George T. Gregg	Meteorologist	Albuquerque
Helen T. Hagemeyer	Secretary	Central Office
Charles B. Johnson	Meteorologist	Chicago
Donald O. Jones	Warehouseman	Central Office
Emil S. Kurtz	Meteorologist	Los Angeles
Thomas Lassiter	Stock Control Clerk	Central Office
Warren G. Lundfelt	Meteorological Tech.	Central Office
Doctor Lyon	Warehouseman	Central Office
Constance E. Mottaz	Secretary	Central Office
Mary Louise Pickeral	Administrative Asst.	Central Office
John M. Porter	Meteorologist	Chicago
Norman Schuyler	Meteorologist	Los Angeles
Charles F. Simon	Meteorological Aid	NWRC Asheville
Glenn Stallard	Meteorologist	St. Louis
Paul F. Sutton	Meteorologist	Harrisburg
Gemo Yakubovsky	Meteorologist	Los Angeles

Length of Service Awards

35-Year Awards

Atlanta, Ga.
Rolen L. Cornelius

Baton Rouge, La.
Alvie E. McGrew

Central Office
Maurice F. Kleindienst

Charleston, S. C.
Walter Richmond Hall

North Platte, Nebr. WBAS
Wendell Hammon

30-Year Awards

Albuquerque, N. M.
Howard E. Hutchison

Baltimore, Md. WBAS
Herbert L. Alkire

Boise, Idaho WBAS
David J. Stevlingson

Chicago, Illinois WBFC
Joe R. Fulks

Central Office & Overseas
Robert E. L. Blumenauer
Lewis Hayes
Arthur H. Jennings
William T. Pullen, Jr.
Albert K. Showalter
Chauncey Whittelsey

Chattanooga, Tenn. WRPC
Boyd H. Chapman

Cincinnati, Ohio WBAS
J. Harold Nickles

Ft. Worth, Texas RAO
Charlie J. Raven

Greenville, S.C. WBAS
Ernest W. G. Kliemann

Harrisburg, Penn. WBAS
Paul F. Sutton

Helena, Calif. WBAS
Wilbur F. McKinney

Kansas City, Mo. RAO
Cecil D. Anderson
George E. O'Daniel

Kansas City, Mo. WBFC
Herbert D. Crawford

LaCrosse, Wis. WBAS
Carl C. Peterson

Las Vegas, Nevada WBAS
Clarence V. Lang

Lewiston, Idaho WBAS
J. Howard Whipple

Little Rock, Ark.
James F. Rink

Los Angeles, Calif. WBO
Max K. Bankert

Lynchburg, Va. WBAS
Harry V. Myers

Miami, Fla. WBAS
Paul M. Hannum
Midland, Texas
William M. Percy
Milwaukee, Wis. WBAS
Robert J. Aherns
New York, N. Y. WBO
George H. Barnes
Omaha, Nebraska WBAS
Edward F. Stapowich
Sacramento, Calif. WBO
Floyd E. Hug
San Francisco, Calif. WBAS
Clarence L. Smalley
Edward H. Chappell
Mark J. Cocuzzi
San Francisco, Calif. WRPC
Maurice P. Bergerson
Sioux Falls, S.D. WBAS
Kenneth R. Clark
Shreveport, La.
George M. Baird
Springfield, Mo. WBAS
Daniel J. Maquire
Williamsport, Pa. WBAS
Alfred B. Kline

25-Year Awards

Central Office
Vivian M. Campbell
James H. Morrison
Lillian A. Starks
Cincinnati, Ohio RFC
Vivian M. Moehlman
Ft. Smith, Ark.
Dwight W. Benton
Ft. Worth, Texas RAO
Frank E. Caldwell
Knoxville, Tenn.
Edythe H. Taylor
Madison, Wis. WBAS
George A. Rothfuss
Rochester, N. Y. F.I.U.
Willard A. Brownlee
Salt Lake City, Utah RAO
June E. Brice
Texarkana, Ark.
Thomas F. Ramsey
Tulsa, Okla. WBAS
Kenneth W. Matthews
Winston-Salem, N.C. WBAS
William E. Ingram

15-Year Awards

Albany, N. Y. WBO
Victor W. Hoffman
Anchorage, Alaska WBAS
William G. Sullivan, Jr.
Annette, Alaska WBAS
Harold E. Lowman
Harold A. Standen
Hugh D. Watson
Asheville, N. C. NWRC
Henry L. Bent
Mortimer Buchwald
Charles W. Carlier
Harrison C. Carpenter
Herman P. Cole
Marion A. Crosby
Nathaniel R. Davis
Marian I. Faber
Marguerite H. Fortune
Howard F. Harper
Louise Hooper
Johnnie M. Jones
Clyde J. Mashburn
Henry D. Osborne
Ulysses E. Roberts
Hazel D. Smith
James M. Sparrow
John V. Vaiksnoras
Astoria, Oregon WBAS
Thomas M. Rochester
Atlantic City, N.J. WBAS
Matthew Lefkowitz
Bishop, Calif. WBAS
George B. Kornbrust
Boston, Mass. WBAS
Clarence J. Grogan
Anthony E. Tancreto
Boston, Mass. AWP
Donald W. Doran
Bridgeport, Conn. WBAS
James T. McDonald
Burrwood, La.
Warren E. Brown
Central Office & Overseas
Edward J. Brennan
Joseph H. Brewton
Mary Alice Chilcott
Harold L. Choate
Dominic D. Conte
Eduardo Dilme
James A. Fellgren
Richard E. Foster
Robert H. Gelhard
Rufus E. Gordon
Emmerline V. Harrison
Charles V. Lindsay
Ulysses G. Mabry
August F. Mayer
Mary L. McBath
John J. Murray
Warner C. Murto
Katherine G. Niles
Jack C. Pales
John T. Riedel
Dewey R. Soltow
Helen R. Toombs
Theodore Walters
Chicago, Ill. WBFC
Paul H. Swope
Corpus Christi, Texas
Omer Clarkson, Jr.
Jack R. Fite
Denver, Colo. WBAS
Wayne S. Johnson
Des Moines, Iowa WBAS
William B. Chapman
Dodge City, Kansas WBAS
James V. Burchett
El Paso, Texas
Evelyn E. Meyer
Ft. Worth, Texas RAO
John J. Childers
Grand Junction, Colo. WBAS
Daniel M. Morgan
Hartford, Conn. WBAS
Warren Silverzahn
Jackson, Miss.
Quimby M. Middleton
Kansas City, Mo. WBFC
Howard R. Morgan
Kansas City, Mo. SELS
Perry A. Wood
Lander, Wyo. WBAS
Clinton E. Hanson
Long Beach, Calif. PWP
Anthony E. Rippo
Miami, Fla. WBAS
Jesse V. Carmichael
Norman W. Nixon
Eleanore I. Parent
Miami, Fla. DMO
Francis J. Drybala
Minneapolis, Minn. WBAS
Vinton R. Bouslough
Robert J. Whalen
Montgomery, Ala.
Harrison W. Spencer
New York, N.Y. RAO
Leo J. Chimenz
Connie J. Hodges
Charles J. Noguera
New York, N.Y. WBO
Edith G. Bauer
Wilbur J. Meredith
New York, N.Y. WBAS
Benjamin Fox
Norfolk, Va. WBAS
Dorothy J. Chapman

NEW MIC'S

Huron, South Dakota

A. Boyd Pack, now State Climatologist at Hartford, Connecticut, has been selected for transfer to Huron as MIC and State Climatologist.

Mr. Pack is 40 and entered the Weather Bureau January 16, 1956 in his present assignment at Hartford. He received degrees in Agronomy from Brigham Young University and the University of Massachusetts and his Ph. D. in Plant Physiology was obtained from North Carolina State College.

Wendover, Utah

S. Thomas Andersen, who is presently in charge of the Weather Bureau Office at Burns, Oregon has been selected as Meteorologist in Charge of the new station at Wendover. Following specialized meteorological training at the Training Center in Seattle, Washington in 1943, he was one of the first employees assigned to the new mountain station at Stampede Pass, Washington. In October 1944 he was transferred to Crescent, Oregon as Observer in Charge and one year later to LaCrosse, Washington in the same capacity. Mr. Andersen returned to Stampede Pass as Meteorologist in Charge in October 1946, where he remained until transferred to his present assignment at Burns in December 1955.

Mr. Andersen is 48 years of age and a native of Ellensburg, Washington. Following graduation from Ellensburg High School, he completed two years of study at Central Washington College of Education.

RETIREMENTS

Ethel L. Griffin

ETHEL L. GRIFFIN, Payroll Clerk in the Central Office Fiscal Section, retired September 30 after 17 years of government service.

A native Georgian, Mrs. Griffin graduated from Pelham High School and attended Georgia State College for Women at Milledgeville. She taught school from 1911 to 1914 and was employed in private industry for many years before giving up her career to be married in 1925. Mrs. Griffin entered government service during World War II as a clerk in the War Department. She transferred to the Weather Bureau on June 4, 1943, serving in various assignments in the Fiscal Section until her retirement.

Mrs. Griffin plans to remain in Washington, and friends may continue to contact her at 3601 Connecticut Avenue, N. W.

Charles H. Newton

CHARLES H. NEWTON, Meteorologist in Charge, Texarkana, Arkansas, retired August 31 after more than 36 years of government service.

Mr. Newton was born in Midlothian, Texas, where he attended elementary and high school. He earned his B. S. degree in physics at Polytechnic College, Fort Worth, and following graduation from college in 1913, he spent many years as a high school teacher and principal. He entered the Army during World War I as a private and was commissioned a Lieutenant in the Field Artillery prior to his discharge. Mr. Newton's first government service dates back to 1909 when he served as a substitute carrier and clerk for the Post Office in his home town. He entered the Bureau as a Junior Observer on July 7, 1930 at Corpus Christi where he served for four years, transferring to El Paso in 1934. He accepted an assignment as OIC at Big Springs, Texas, in 1940 and in 1944 he went to Texarkana as MIC, serving in this capacity until his retirement.

Mr. Newton was recently granted a cash award for his suggestion concerning an improvement in WB Form 400-5. The check and certificate were presented to him by the Fort Worth Regional Administrative Officer at a surprise retirement ceremony arranged for Mr. Newton at the Texarkana Lions Club luncheon on August 18.

Mr. Newton's mailing address is 661 Arizona Street, Wake Village, Texas.

Roy A. Wells

ROY A. WELLS, Meteorologist, Weather Records Processing Center, San Francisco, retired September 30 after more than 43 years of government service. His service has been continuous with the Weather Bureau with the exception of furlough for active duty in the Navy during World War I.

Mr. Wells was born at Huron, South Dakota, September 23, 1889. He started his career as Assistant Observer at Denver back in 1916, with subsequent assignments at the Central Office; Wagon Wheel Gap, Colorado; Williston, North Dakota; North Head, Washington; Portland, Oregon; Redding, California; and San Francisco. From 1944 to 1948 Mr. Wells was associated with the San Francisco Hydrologic Unit, and in March 1948 he transferred to the San Francisco WRPC where he was employed in the Climatological Review and Analysis Unit until his retirement.

Mr. Wells has served the Bureau faithfully and well during his long career and has been responsible for many new methods for more efficiently accomplishing the Bureau's objectives in the various assignments in which he has engaged.

After retirement Mr. Wells plans to continue his hobbies of gardening and fishing. His wife, Margaret, shares his interest in these activities, and in addition

they plan to do considerable traveling. They will maintain their residence at 258 Flood Ave., San Francisco.

Chauncey A. Whittelsey

CHAUNCEY A. WHITTELSEY, Meteorological Aid at the National Weather Analysis Center, retired September 30, following closely his 30th anniversary in the Weather Bureau.

A native of Kansas, Mr. Whittelsey graduated from Topeka High School and attended Washburn University of Topeka. He was employed in private industry for several years before entering government service as a Junior Observer at St. Joseph, Missouri, on September 16, 1929. Subsequent assignments included Kansas City, Rock Springs, North Platte, and Terre Haute. In 1952 he transferred to the Analysis Center in the Central Office where he served until his retirement.

Mr. Whittelsey plans to make his home in Phoenix after retirement, but for the present friends may continue to contact him at 7 Barney Circle, S.E., Washington, D. C.

Deaths

Cecil D. Anderson

CECIL D. ANDERSON, Substation Inspector for Missouri and southern Illinois, died September 13 at the age of 62.

A native Iowan, Mr. Anderson entered the government service in 1930 as a Rural Mail Carrier at Scranton, Iowa. He joined the Weather Bureau on June 16, 1943, as a Junior Observer at Kansas City. A year later he transferred to Des Moines where he served until July 1953 when he returned to Kansas City for assignment in the Observation-Charting Unit at the Weather Bureau Forecast Center. In November 1955 he was selected as Supervisor of the Charting Unit. In this position he was rated "Outstanding" for the year ended March 31, 1957, and granted a Superior Performance Award of $100. Mr. Anderson was promoted to Substation Inspector June 1, 1958.

Survivors include Mr. Anderson's wife, one daughter, and two grandchildren. The home address is 5715 Lamar, Mission, Kansas.

Jean H. Gallenne

JEAN H. GALLENNE, Communications Supervisor in the Central Office when he retired June 30, 1949, died in Washington September 10 at the age of 68. He joined the Weather Bureau as a messenger in 1909, and his entire career of almost 40 years was spent in the Central Office.

Mr. Gallenne is survived by his wife who lives at 4311 Alton Place, N. W. in Washington. Mrs. Gallenne is a former Weather Bureau employee who retired from her position in the Procurement and Supply Section of the Central Office in October 1956 after more than 33 years of service.

Edwin E. Hamilton

EDWIN E. HAMILTON, Electronic Engineer in the Central Office Instrumental Engineering Division, died September 7 following a short illness.

Mr. Hamilton was born in Chattanooga, Tennessee, September 30, 1917, but moved with his family to Milwaukee, Wisconsin, at an early age. He graduated from Milwaukee's Riverside High School and attended the University of Wisconsin for two years prior to entering the Weather Bureau in 1941 as a Junior Observer at LaCrosse. In 1942 he transferred to the Central Office where he served for six years as a laboratory mechanic in the Instrument Division and for more than 10 years as an Electronic Engineer. Mr. Hamilton attended George Washington University on a part-time basis and was awarded his bachelor's degree in Electrical Engineering in 1950. In his most recent assignment Mr. Hamilton was engaged in the development of improved methods for obtaining upper air data, serving as Project Leader in the development of new types of upper air equipment and in the major redesign of existing upper air equipment. He will be long-remembered for his pleasant personality, his outstanding work, and the other fine qualities he possessed which made him such a valuable employee.

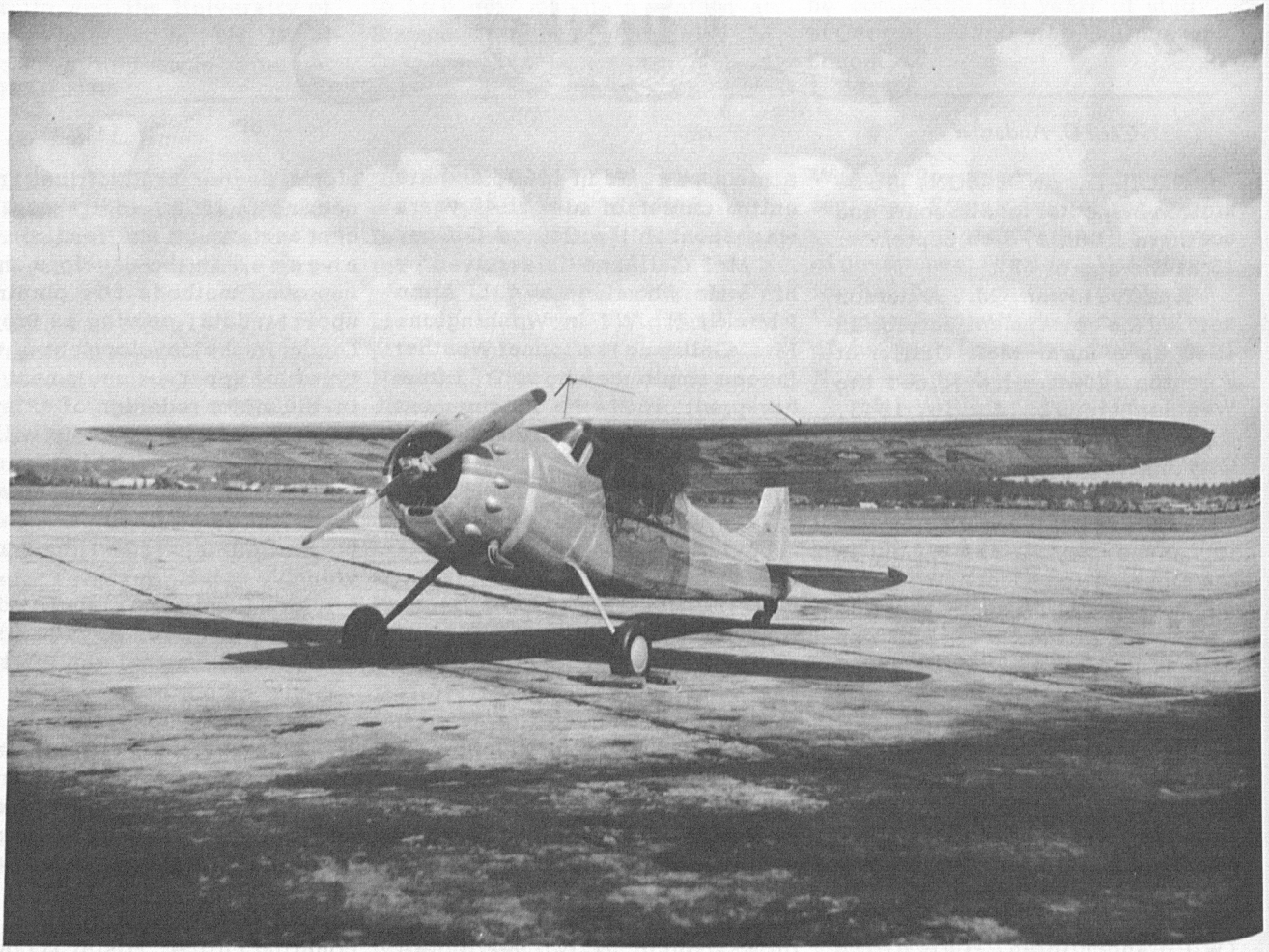
Mr. Hamilton is survived by his wife, who lives at 7103 Highland Avenue, Springfield, Virginia.

Evelyn C. Turner

EVELYN C. TURNER, Meteorological Aid, National Weather Records Center, Asheville, died August 25 following a long illness.

Mrs. Turner was born in Asheville on February 2, 1921. She was employed by the General Accounting Office, Postal Accounts Division, in Asheville from 1945 to 1951 and by the Regional Accounting Office of the Post Office Department in Dallas from June 1951 until her transfer to NWRC in April 1952.

Surviving in addition to her husband, James A. Turner, are a daughter and two sons, all of the home address, 550 Merrimon Avenue in Asheville.



Old WB Airplane

WEATHER BUREAU
TOPICS

Volume 18 Number 11

Volume 18 NOVEMBER 1959 Number 11

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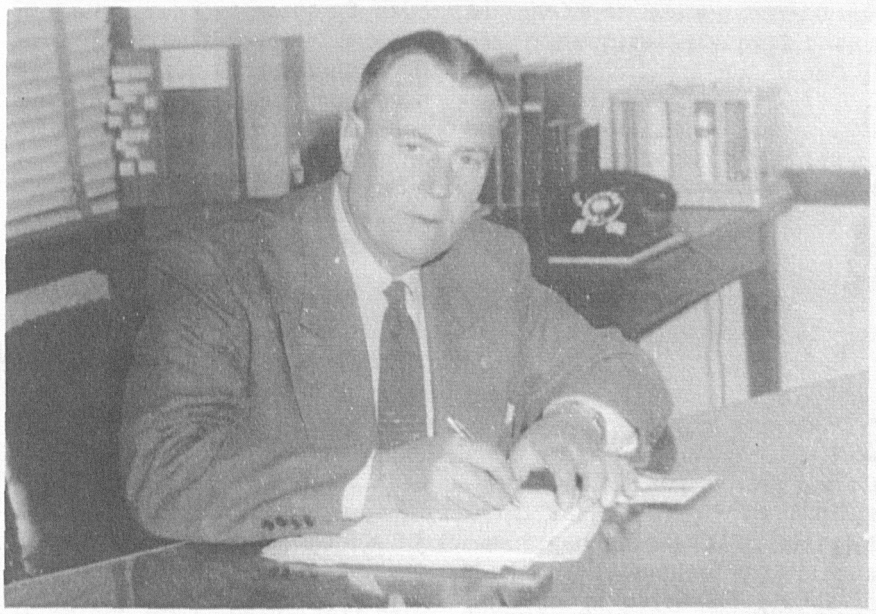
WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through 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.

REGIONAL ADMINISTRATIVE OFFICER

Mac A. Emerson



THE transition from Assistant Regional Administrative Officer to the Regional Administrative Officer position in Anchorage was a minor one for Mac A. Emerson who had served in that position for over 13 years. These 13 years gave him complete familiarity with the problems past and present attendant to the administration of the Weather Bureau program in Alaska and a broad base of knowledge with which to cope with the problems to come.

Mr. Emerson's 32 years of Weather Bureau service began July 1, 1927, when, after graduation from high school in Battle Creek, Michigan, and a tour of duty with the lighter-than-air unit of the U. S. Signal Corps at Scott Field, he entered the Bureau as an observer at St. Paul, Minnesota. Shortly thereafter he married the former Marie McNees in St. Charles, Missouri.

In January 1928, he succeeded to the position of Meteorologist in Charge of the St. Paul Office. The local newspapers apparently found in meteorology a new and fascinating subject and found in Mr. Emerson a capable and literary salesman of the concept of modern-day forecasting and the scientific approach to meteorology, for during the next 10 years he collected a whole scrapbook of clippings. No small portion of these were devoted to Mr. Emerson's extensive efforts toward the establishment of weather reporting stations and implementation of airway weather service to cover the airmail line extension of Northwest Airlines to Billings, Montana. Another item of interest was his personal and publicized weather forecast for Dr. Jean Piccard, who made a historic flight from Rochester, Minnesota to a tree-top near Lansing, Iowa, in the first sounding balloon-lifted craft ever to carry a man aloft, an open gondola lifted by 100 6-foot balloons.

After 10 years at the St. Paul station, Mr. Emerson was promoted to the position of Airways Inspector with headquarters at the Municipal Airport at Chicago where he conducted field inspection of all weather reporting stations in the Chicago airway district and aided in the establishment of new stations in the ever-expanding network of weather reporting stations. In August 1941, he was promoted to the newly-created position of Chief Liaison Officer established in connection with the organization of Weather Bureau Administrative Regions. Then in January 1945, he made the move to the fifth of his six assignments in the Bureau by transferring himself, his wife and their three daughters to Anchorage, Alaska, where he has since become so much an Alaskan that he has almost (but not quite) lost his allegiance to the native state of Michigan that he still calls home.

His talent for and experience in liaison work were given full play in the years following World War II with the establishment of additional stations in Alaska, many in conjunction with the CAA, some as takeover stations with the military, and he maintains a close and harmonious relationship with these and other agencies and with the airlines. While he counts among his major achievements the establishment of the St. Paul - Bismarck - Billings and St. Paul - Winnepeg reporting stations and the liaison work with the Air Force in establishing forecasting services along the midwest sector of the Alaska - Siberia route, the employees of Region V consider one of his major achievements to be an easy friendliness and understanding that has made him known to them all. He has repeatedly traveled the length and breadth of Alaska - by LST, by dogsled, or by air in the widest variety of equipment possible. He is a member of the American Meteorological Society, serves on the Alaska Meteorological Committee,

is a member of the Lions, the National Geographic Society, a past president of the PTA, one of the charter members and a past president of the CAA-Weather Bureau Credit Union and the Anchorage Co-op. He counts among his most prized possessions a certificate in the Society of Airways Pioneers, membership in the National Rifle Association and past certification as a Registered Alaskan Guide. For dear to his heart is the subject of guns and hunting. He is an expert on handloading and gunsmithing and his advice is available to all in the Bureau, just as his services as a Registered Alaskan Guide were offered to his friends during the years when all big-game hunters in Alaska had to be accompanied by a Registered Guide. He has seldom let a hunting season go by unchallenged and has seldom come home empty handed, yet he boasts nary a trophy of his hunts, sharing a popular opinion that the horns are the poorest part of the animal for eating. He has become so much a part of the Alaskan way of life that only strong sentiment can entice him "Outside"-namely, a daughter and son-in-law (Mr. and Mrs. Milton G. Johnson) plus four granddaughters residing in Asheville, North Carolina, and another daughter and son-in-law (Mr. and Mrs. James Knappen) plus a grandson and granddaughter residing in California. Following any clean sweep of the "South 48", Mr. and Mrs. Emerson can return with one consolation - another daughter (Mrs. JoAnn Husbands) and granddaughter make their home in Anchorage.

Research Activities by SELS Center at Kansas City

IN September of 1954, the Severe Local Storms Forecasting Center was moved from Washington, D. C. to Kansas City, Missouri. Given the heavy responsibility for improving methods of severe thunderstorm and tornado forecasting, the Operational Forecasting Unit and the Research Unit combined to spend all possible time investigating and formulating ideas to improve the techniques. Pressing demands from the public and the daily press placed great urgency on this subject in which millions of people are vitally interested.

As a by-product of this work, 43 articles have been published in the technical journals since 1954: 8 articles in Weatherwise; 17 articles in the Monthly Weather Review; 11 articles in the Bulletin of the American Meteorological Society; 2 articles in the Journal of the American Meteorological Society; 4 articles in miscellaneous publications, in addition to Forecasting Guide No. 1. Some of the published papers are the following: "A Mechanism for Assisting in the Release of Convective Instability," "Thunderstorm Gusts Compared with Computed Downdraft Speeds," "A Theoretical Estimate of Draft Velocities in a Severe Thunderstorm," "The Jet Chart," "Air Mass Modification and Upper Level Divergence," and "The Mechanics of Instability Line Formation." Most of the published papers, and 16 additional papers have been presented at National Meetings of the American Meteorological Society. Informal presentations and papers for local study and use, such as "Report on Effect of Random Vector Wind Error on the Accuracy of Measurement of Horizontal Divergence," total about 80 more. The units have also prepared and conducted lectures and case studies in the Practice Forecasters' Training Course conducted at the District Meteorological Office, Kansas City, Missouri. Four classes averaging four men to a class have attended this course.

The above work and papers (more than 140) have been accomplished in addition to the regular duties. Papers and studies now in preparation or which have been submitted for publication, deal with topics such as possible vertical updrafts computed from buoyancy considerations and convergence-divergence couples; application of Dr. Petterssen's "Development Equation" to short range forecasting; squall line and frontal development; air mass modification and turbulence as observed and recorded by the Tornado Research Aircraft.

Although the foregoing tends to emphasize the predictions of thunderstorms, it is becoming increasingly evident that the physical-theoretical concepts and techniques developed and being developed are equally applicable to the prediction of other weather phenomena, such as heavy snow and rain conditions.

What progress has been made to date has served not only to improve the forecast product but has indicated additional avenues for study and has raised numerous questions that need to be answered. As these studies progress and the questions are answered, further improvement in the forecasts is to be anticipated.

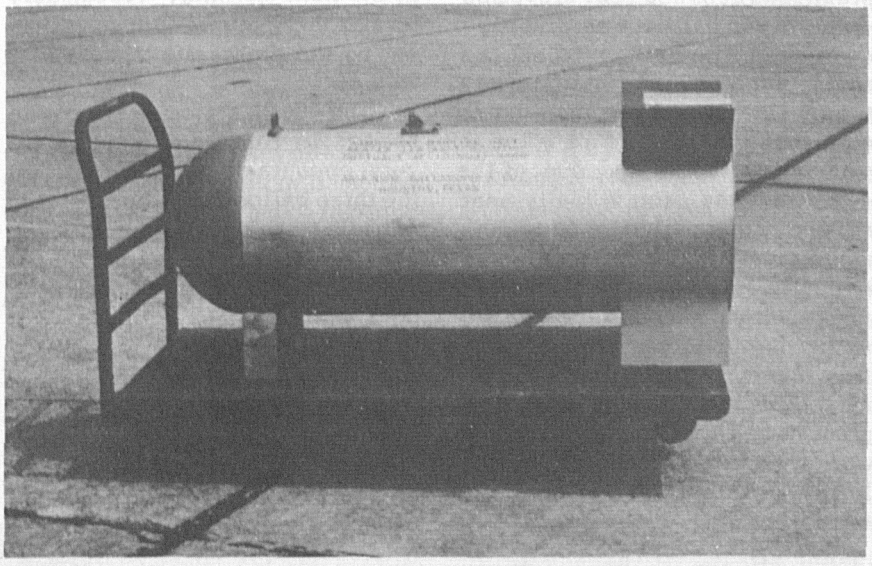
Weather Modification

AT the request of Senator Kerr, Chairman of the Select Committee on National Water Resources of the U.S. Senate, the Weather Bureau has prepared a summary report on the "Progress and Possibilities in Weather Modification." The attention of all personnel is invited to this important report, a copy of which is being furnished to each office.

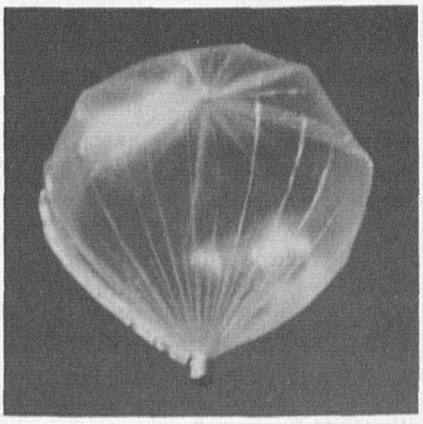
The Hurricane Beacon

A free floating balloon remained in the eye of a hurricane for 23 hours on October 2 and 3. This is the first time that this has ever been accomplished. The balloon was placed in the eye of Hannah during one of the series of tests of the hurricane beacon, drops of which were made from planes of the 59th Weather Reconnaissance Squadron of the Air Force operating out of Bermuda on October 1, 2, 3, and 4. The hurricane beacon has been three years in development in a project which is a cooperative effort of the Geophysics Research Directorate of the U.S. Air Force and the U.S. Weather Bureau. Of the four packages dropped, three of the balloons inflated normally and all remained in the eye long enough for the test to be considered successful.

The hurricane beacon package is a device which, when dropped from an aircraft in the eye of a hurricane, automatically inflates a balloon which is preset to float at a fixed level. The balloon carries a radio beacon which can be tracked from a distance by radio-direction-finding equipment. The hypothesis is that a balloon set to float at the proper fixed level will remain in the eye of a hurricane for a few days and make possible tracking of the hurricane from safe distances by plotting positions of the beacon. If further tests confirm that balloons can be depended on to remain inside the eye of hurricanes for long periods, a break-through in development of hurricane tracking techniques is possible, and it may not be necessary to have so many penetrations of hurricanes by aircraft with the associated risks to the crews.



Hurricane beacon package ready for loading into bomb bay of aircraft



Hurricane beacon in flight

The successful tests provide also a new technique for investigation of hurricane circulations. Data collected from research flights made by the National Hurricane Research Project aircraft from 1955-58 indicate that at some levels the air has a net inflow towards the eye. Presumably, therefore, balloons dropped at any of these levels would remain in the eye. At other levels, presumably a free floating balloon should soon be blown from the eye. By releasing balloons preset to float at various levels it should be possible to make a more detailed study of the circulations in and around the hurricane eye and to locate with greater precision the layers of inflow and outflow. These data will be very valuable for studies involving hurricane models, energy transformation within hurricanes, and the dynamics and kinematics of hurricane circulations.

The balloon dropped on October 1 was released from the aircraft at 8,000 feet. After the balloon had become inflated it ascended to 16,500 feet, was then caught in a downdraft and descended to 1500 feet. When sufficient ballast was released, it rose to 14,000 feet, the level for which it was set to float, and stayed there for two hours. The balloon then gradually descended and when the last signal was received from it, 7 ½ hours after it was dropped, the balloon was at 1500 feet. At this time the airplane landed. It is assumed that the balloon descended into the ocean, because the last signals received indicated that the ballast was exhausted; thus there was no mechanism to cause the balloon to ascend again.

For the drop on October 2, the ballast dispensing mechanism was adjusted differently in order to release the ballast more slowly when the balloon was caught in

downdrafts. Again the beacon package was launched at 8,000 feet; the balloon inflated and stabilized at 5,000 feet elevation until enough ballast was dispensed to cause the balloon to ascend to 14,000 feet. The balloon was tracked by radio-direction-finding equipment for 7 ½ hours after it was deposited in the eye of the storm and was seen visually near the end of that period. The reconnaissance aircraft then returned to base. The next morning the aircraft crew received the beacon signal immediately after takeoff from Bermuda and heard it terminate within two minutes of the time programmed for the self-destruction mechanism to be activated—23 hours after the balloon was inflated.

The balloon launched on October 3 malfunctioned.

The balloon launched on October 4 performed normally but was in more turbulence than those on October 1 and 2. As a result, within seven hours more ballast had been dispensed than in 23 hours for the October 2 drop. The balloon was still within the eye of the storm when the aircraft departed for home base, but was gone by the next morning. Presumably it sank in the ocean sometime during the night after the ballast was all lost.

The results from tests of the beacon in Hurricane Hannah are very encouraging. The fact that the three balloons which operated normally all remained within the eye of the hurricane as long as the balloons were afloat gives hope for eventual successful operational use of the hurricane beacon. It should be practical to redesign the balloon and ballast mechanism to successfully counteract the downdrafts, or develop a super pressure balloon that will not require ballast. Such a balloon has been successfully made on other projects.

The way is now open for further development of the package to provide for a beacon that can be located from great distances, and for experiments with tracking the beacon under operational conditions.

Who's Crying Wolf

THE following editorial appeared in the Springfield Leader Press, Springfield, Missouri, and it is reprinted with their permission.

"At exactly 2:55 p.m. Saturday, a funnel of fury swooped down on the tiny community of Grovespring. Within seconds: homes were flattened or utterly demolished and blown away; not a business building was left standing; cars were picked up and tossed around like so many bits of chaff; trees snapped into matchwood under the rending force of this terror of nature.

"And then, quickly as it had come, the storm passed on, and the townspeople of Grovespring crept out of their holes and crannies and cellars and culverts to look at the damage and begin the sorrowful task of computing their personal losses.

"A tragedy of destruction such as only those who have witnessed the wild might of tornadoes can imagine. The little town appeared as if it had been the target of a blockbuster bomb.

"But amidst all that tragedy, one fact soon emerged—a wonderful, miraculous, God-thanking fact—

"Not one person had been killed; not one even really injured.

"A miracle? Perhaps, but there was something more than a miracle to this—an explanation of the miracle, at the very least. The people had been warned, had been watching for just the sort of devastation that struck. And warned and watching, they had sought out just the kind of shelter they had been advised to seek. Out in the open, they sought culverts; in town, basements, storm caves. Twenty-two of them had crowded into one small cellar.

"Out at the edge of town one man had been watching, alerted to the approaching danger. He ran screaming his warning as he saw the approaching funnel of wind wrath.

"Another ran up and down the streets shouting warnings to all who could hear. Cars tore through the little town's streets, honking their horns in warning. At least two citizens, thus warned, grabbed up sick and bedfast persons and bore them to shelter.

"God undoubtedly helped, but, proverbially, He has a habit of helping those who help themselves, and the people of Grovespring had helped themselves to the best of their knowledge and within the limits of their short time before destruction struck.

"For that they-and we-can thank the Weather Bureau and the storm warning system it has set up.

"How many times have we had our television or radio programs interrupted with that grim warning-and seen it come to naught? Like the villagers who had heard the cry of 'wolf' too often, many of us had become indifferent, unhearing of that sound of the storm tocsin.

"How many of us have belittled the warning system as 'so much foolishness,' just because the warned-of storm has struck nowhere near us? Let's be honest about it—how many of us have grumbled and criticized the Weather Bureau for these warnings in the past?

"Well, we shan't again. The next time, with the thought of Grovespring still in our memory, we'll heed.

"So, for the miracle of survival in Grovespring we can and do thank God.

"But this time we, and Grovespring too, are also thanking the Weather Bureau."

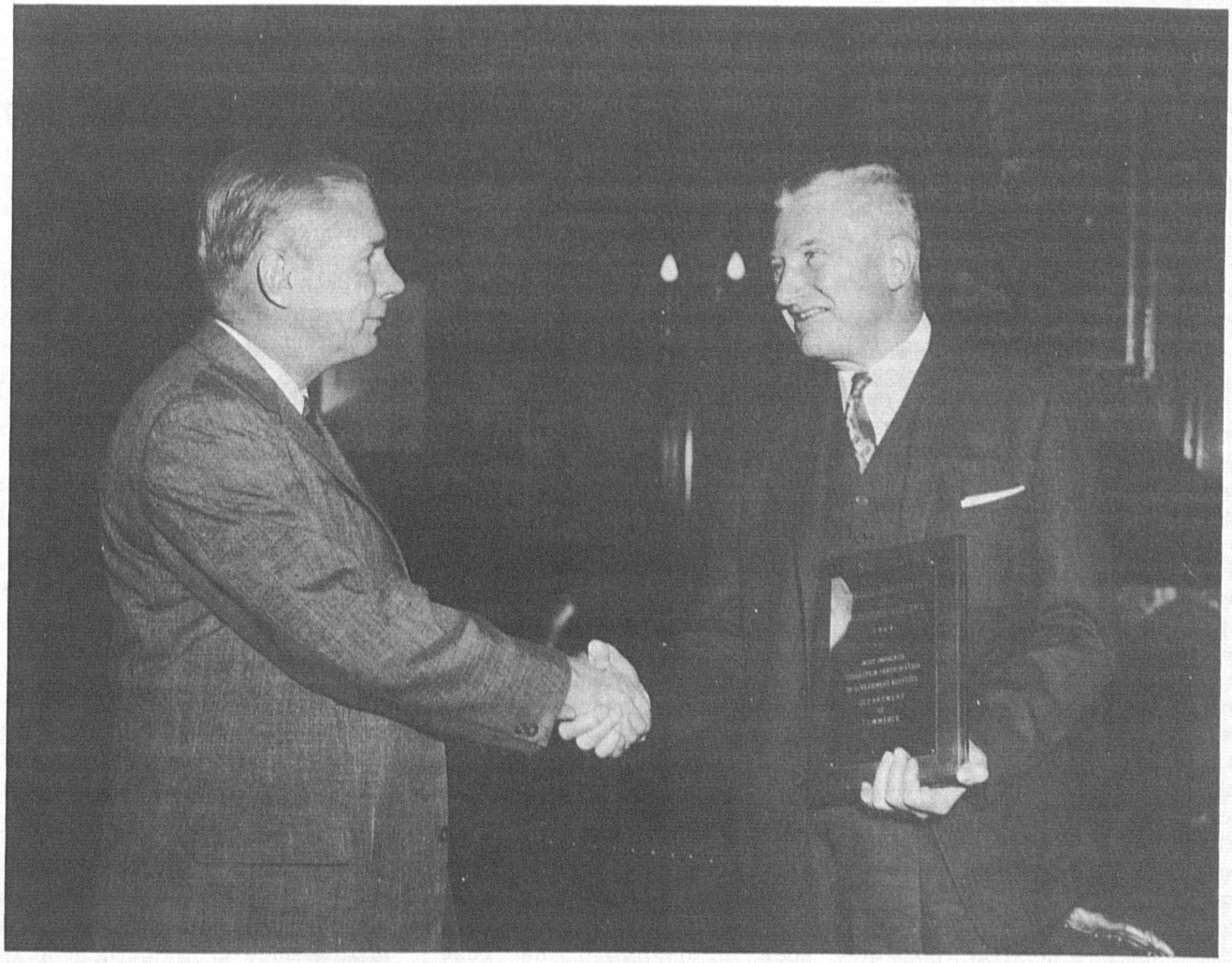
NASS Award

SECRETARY OF COMMERCE Frederick H. Mueller accepted on behalf of his Department a plaque awarded by the National Association of Suggestion Systems for showing the best rate of increase of participation in the employees' suggestion program for the period in all public agencies, Federal, state, and local. The presentation was made by Henry W. Newbegin, President of the NASS, in Mr. Mueller's office.

During fiscal year 1959 the Department increased its participation from a rate of 143 suggestions per 1,000 employees to 304, an increase of 113 percent.

Winning the award places the Commerce Department in company with the Radio Corporation of America, which won the corresponding award for the best rate of increase of participation of employees of any firm among the industrial organizations of the Nation. Other members of this exclusive club are the Port of New York Authority and the International Business Machines Company, public agency and industrial organization winners, respectively, in competition for the highest over-all participation rate among their employees.

The NASS is comprised of industrial organizations as well as governmental agencies, providing to its members opportunities for exchanging ideas in all areas of suggestion programs by means of monthly releases, newsletters, periodicals, regional conferences, national conventions, etc.



Mr. Newbegin presenting award to Secretary Mueller

Our Wind Reports are too Low--Or are they?

IN 1954 the Weather Bureau embarked on a modest program to install remote wind equipment at locations where it was found impossible to obtain minimum exposure standards as required by the Circular N Addendum. By late 1955 about a half dozen such locations were equipped and in 1956, with the issuance of CL 34-56, we first began to plan a large scale improvement of wind equipment exposures. The year 1957 saw the first results of this planning, when Regional Administrative Offices were instructed to install remote wind equipment at all Joint-Use airports. Imminent availability of 134 hygrothermometers gave added impetus to the program in 1958 and early 1959, and our pace at present is relocation at approximately six airport stations per month. At latest count there were 64 stations operating from the remoted site, with 31 more where the relocation was made but operation was awaiting some equipment components.

Although this program is costly when compared to previous wind equipment installations, the compelling reasons for the program are obvious to those who have seen wind vanes atop control towers, administration buildings, etc., which rotate madly through 360° when strong, gusty winds are broken into local eddies by the building structure. Another not-so-obvious reason is for sake of height standardization: previous exposure standards have recommended installation at 30 to 35 feet, but a review of exposures shows that not more than one major airport in 20 was able to achieve this height standard. Actual heights at old exposures usually range from near 50 feet to over 400 feet (454 feet at WBO New York)! Under the new program, all wind equipment is to be exposed as near as possible to the center of the "runway complex" (usable landing area) of an airport with the rotor at a height of 20 feet above the ground. In addition, the site should be at least 1500 feet from any building or other obstruction more than 15 feet high.

Advantages to be gained from the program can be summarized as wind reports that are more reliable, and are comparable between airports for operational purposes (i.e., a wind report of 18 knots would result in about the same flight characteristics at all airports for a given aircraft). Another big advantage is that for the first time climatological records will not be broken each time the weather station is moved to a new building on the airport, or each time another building is erected close to the previous exposure.

When remote wind equipment is installed at your station, you may find that operating personnel —FAA tower personnel and airlines personnel, as well as pilots— will question the accuracy of reports from the new location. Their complaints will almost always be that the reports are too low; at one station, even one of our own forecasters was heard to say "When the wind makes white-caps on the water like that, the wind is always 20 knots or higher." A little reflective thinking on his part soon convinced him that he should have added "at 107 feet where the equipment used to be located."

There is an empirical formula, based on thousands of observations, which states that the speed at any desired level above the ground is to the speed at a given "base" level as is the 1/7 power of the ratio of the height at which speed is desired to the "base" height. Thus:

$$\frac{V_h}{V_{ho}} = \frac{h}{h_o}^{1/7}$$

where V_h = speed at any desired level

V_{ho} = speed at anemometer level

h = desired height above ground

h_o = height of anemometer above ground

A wind of 20 knots at 100 feet would thus correspond to a wind of 15.9 knots at 20 feet. When a station's reported wind is thus suddenly decreased by over 20 percent due solely to a change in exposure, it is no wonder that most everyone, including quite a few highly capable meteorologists, become alarmed over possible mis-information!

Wind reports from some remote sites do have one feature which makes them different from previous exposures. When the cable run is more than approximately 3000 feet, retransmitters must be used in the circuit to make up for loss of current in the line. Our first purchases of retransmitters were built with a response-time lag of 2 or 3 seconds, so the peak gusts are frequently shown a little low and the dial pointer appears somewhat sluggish in gusty conditions. This is not as detrimental as it sounds, however, since earlier models of F420 type wind indicators have always tended to "overshoot" the true peak speed.

Engineers at the Instrumental Engineering Division have now adopted a new principle - utilizing "magnetic amplifiers" - to replace retransmitters in our wind systems. The first model of this equipment has been tested and should prove far superior to retransmitters. There are no moving parts in a magnetic amplifier, and maintenance on this component is negligible when compared to that

for retransmitters. An order for a limited supply of magnetic amplifiers has been placed and should be received within the next few months.

It is well that Weather Bureau personnel are quite careful to compare data from new equipment and new exposure sites with data from some previously accepted standard. On several occasions, this alertness on the part of our field personnel has resulted in early correction of technical oversight on the part of our Central Office project leaders. We hope that you will be just as critical of your wind equipment relocation when it is made; we would suggest that you consider all possible criteria, such as height changes, equipment component changes, etc., to determine if new data are unreasonably different from previous data. If you become convinced that there is an unexplained difference between data, arrange through your Regional Administrative Office to have the calibration of the wind system checked. After the starting torque has been checked and the system calibrated to within tolerance at two or more points on the scale, you may rest assured that the values shown by the system are truly representative of conditions at the new site.

Certificate of Award

ON October 12, 1959 the Navy Department presented the Navy Distinguished Public Service Award to Dr. Harry Wexler which reads as follows:

"In appreciation of distinguished public service to the United States Navy The Secretary of the Navy takes pleasure in presenting the Distinguished Public Service Award to Dr. Harry Wexler for services set forth in the following citation:

"For outstanding contributions to the Department of the Navy in fulfilling its mission as executive agent for the United States Antarctic Program during the International Geophysical Year. Dr. Wexler's broad experience and intimate understanding of the practical and scientific aspects of meteorological coverage were of great assistance to the Navy in establishing the first Weather Communications Network in the Antarctic and in building the first Weather Central for the Antarctic at Little America. His efforts which helped materially to early consolidate the requirements for scientific studies at the various United States International Geophysical Year Antarctic stations enabled the Navy to plan the timely delivery of equipment and men to support these disciplines. Dr. Wexler's personal visits to each Antarctic station, where he cheerfully endured the hardships and dangers of cold weather operations significantly contributed to the splendid spirit of cooperation that existed between the military and scientific personnel. His farsighted planning, cooperative spirit, and thorough understanding of the logistic problems of the Navy were distinguished contributions to the overall success of Operation Deep Freeze and represent a most valuable service to the Department of the Navy. Dr. Wexler's conduct as an outstanding scientist and leader of one of the most ambitious pioneering and scientific enterprises of modern times is in the highest tradition of patriotic devotion in our country. In recognition of and appreciation for his invaluable and patriotic services, this award is approved this first day of September 1959."

W. B. Franke
Secretary of the Navy

Accentuate the Positive

FORECASTERS place great emphasis on issuance of warnings of hazardous or damaging weather conditions, and rightly so! Protection of lives and property is our paramount responsibility.

Alternately, why do we not seize the opportunity to emphasize really favorable weather for a specific popular event or activity, particularly when it can be forecast with a high degree of confidence? For example, when the forecast period includes a weekend or a holiday and coastal weather conditions are expected to be ideal for picnics and small boats, why not say so? When weather expectations are favorable for enjoying the coloring of trees in the mountains in the fall, or when a period of dry weather is expected after a protracted period of stormy or rainy weather, why not highlight this?

We can emphasize expected weather that is unusually fine in terms of the primary interest of the community, by issuing special bulletins to the press, just as we do for severe weather.

More descriptive "newsy" terms specifically suited to the day or event can make the forecast more meaningful. For example, terms such as "sunny," "dry," etc., can have more meaning than the routine and overworked term "fair."

Not only are such forecasts much appreciated by people making recreational plans, but such emphasis may call more attention to commercial applications in weather-sensitive commercial activities.

This extra attention to the form of our forecasts would pay off in better public service, which in turn would result in more support for the big job we have to do.

Practice Forecast Program

THE 1960 Practice Forecast Program is open to all meteorologists regardless of grade, position, or number of credits in meteorology and to meteorological technicians doing briefing work and actively working to qualify as meteorologists. However, participation in this program does not take the place of the general requirement for promotion in the professional grades, namely:

a. twenty credits in meteorology including three semester hours in dynamics,

b. mathematics through both differential and integral calculus, and

c. a year of college physics.

It is assumed that those who enter the Practice Forecast Program without first acquiring the academic credits for the professional meteorologist grades will proceed to get those credits as soon as practicable.

Good evidence is at hand to indicate that the Practice Forecast Program gives reliable though not necessarily perfect measure of forecasting skill and more emphasis is now being placed on records made in this program in selecting personnel for forecast assignments. Therefore, it is advisable for employees interested in forecasting positions to take part in the Practice Forecast Program. In this connection, the following paragraph is quoted from Memorandum of October 13, 1959, requesting applications for the 1960 Practice Forecast Program:

"By the time the results of the 1960 Practice Forecast Program become available, initial promotions and reassignments to forecasting responsibilities associated with GS-11 and higher grades will be made almost entirely from the list of candidates having a record in the Practice Forecast Program in addition to the other qualifications for the professional grade."

It is recognized that some participants have more time to spend on practice forecasts than others and that station forecasting facilities vary. An analysis will be made to see to what extent the effect of these factors can be approximated and if significant relationships are detected they can be used in evaluating the record.

WB Staffs in ADC Radar Sites

FOR some months negotiations have been underway between the USAF, Air Defense Command, and the Weather Bureau seeking to develop a plan whereby radar stations of the ADC, particularly in mountainous areas, could be put to use in the radar storm detection program to the extent that the Weather Bureau would not have to budget for, install, staff, and maintain its own radar stations on tops of mountains. The problem of avoiding radar interference has also been a factor in the discussions. The FAA has been included in the discussions with respect to their new long range ARSR-1 radars, but present indications are that a feature called "circular polarization" largely vitiates the use of this radar for weather search.

Formal agreement has been received from the ADC on the general plan and the details are now being worked out. Budgetary action looking toward cooperation with the ADC at a large number of places is now beginning, but it is too early to say what will be the ultimate extent of the program. For the present, however, we are working toward the establishment of such a program at the ADC site near Lake City, Tennessee. The plan is to staff the site with a Weather Bureau unit that would include one GS-11 Meteorologist in Charge and four GS-9 Radar Meteorologists or Meteorological Technicians. All of these people would have to have "secret" security clearance. Appropriate incoming weather communications would be provided so that the personnel could brief themselves properly on the weather to be expected and interpret the radar displays in the light of prevailing weather conditions. Appropriate outgoing communications would be provided so that the radar analysis and interpretation could be furnished on an "unclassified" basis to the Weather Bureau at Knoxville, 40 miles away, for use in warnings of severe storms and floods by that station. If plans develop satisfactorily, solicitations for the position will be made soon by the appropriate offices so that security clearances, transfers, etc., can be arranged in time to begin operation at the Lake City station by January 1, 1960.

Further particulars on this program will be announced as it develops.

AMS Statement on Hurricanes

THE Weather Bureau has secured a supply of reprints of the AMS Statement on Hurricanes printed in the July 1959 issue of the Bulletin of the American Meteorological Society. Field offices desiring additional copies for local use may request them from the Publications Section of the Central Office.

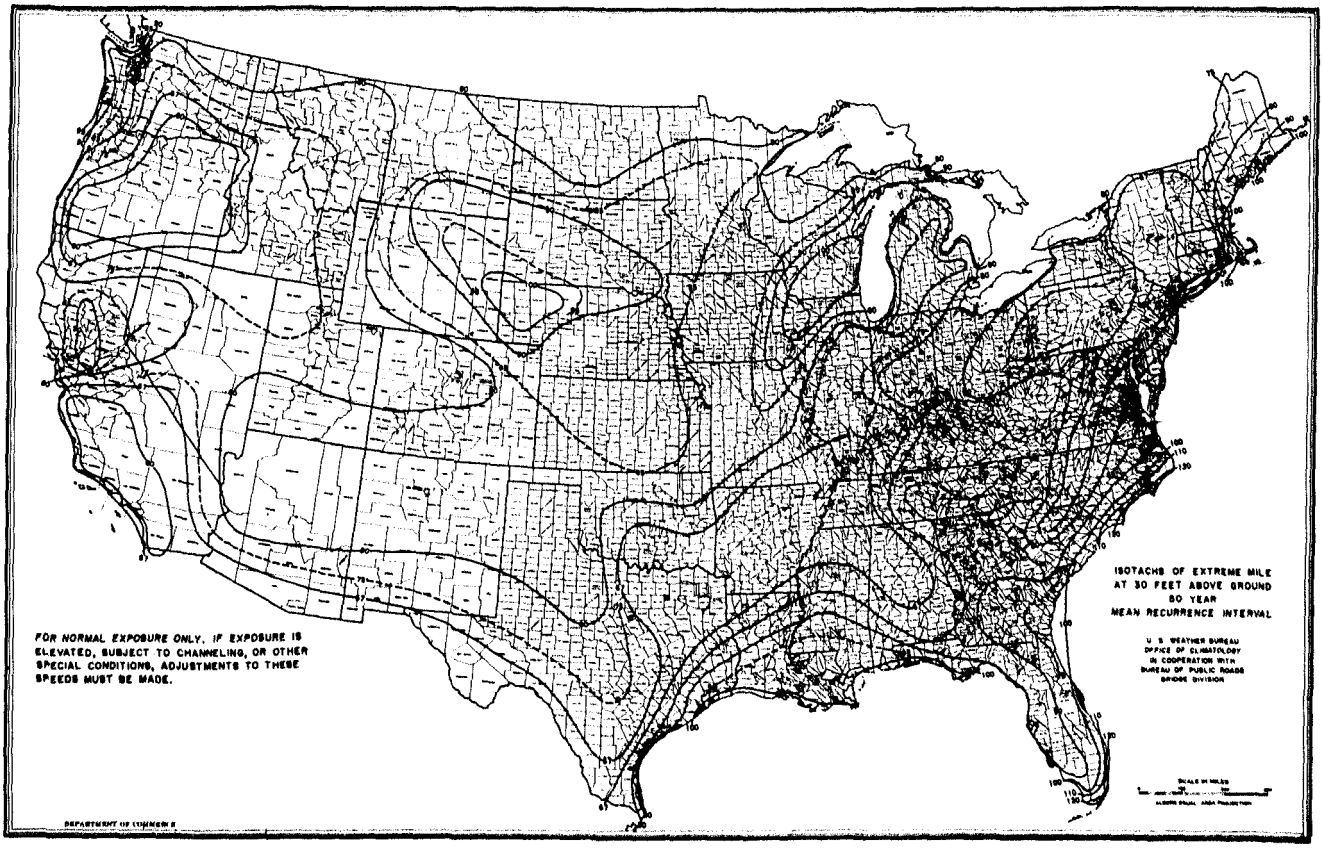
WB Contributes to Highway Program

THE multi-billion dollar highway program under the supervision of the Bureau of Public Roads received an assist at a nominal cost from Mr. H.C.S. Thom of the Office of Climatology. An estimated one-half billion dollars will be spent on signs and highway markers which will be exposed to wind pressures. Meteorologists are aware of the variations in exposure of wind instruments at the various locations. The Bureau of Public Roads was interested in wind speeds for design at 30 foot level for overhead signs.

A wind speed-height nomogram for the solution of the $V_z = V_{30} (z_{30})^{1/7}$ was designed to accomplish reductions to a uniform level. Altogether 131 airport station records and 165 city stations' records were processed, plotted, and analyzed resulting in three charts of the United States showing isotachs of the 2, 50, and 100-year mean recurrence interval of the annual extreme mile.

A letter from Mr. E. L. Armstrong, the Commissioner of Public Roads, says: "The report emanating from this study is highly regarded by our engineers concerned with improved design basis for structures of all types affected by wind speeds. We wish especially to commend the work of Mr. H.C.S. Thom and his associates, and we appreciate this further evidence of cooperation on the part of the Weather Bureau."

Little further need be added to the words of Mr. Armstrong except to point out that satisfied customers are the biggest assets the Weather Bureau can obtain and the best way to obtain such customers is to provide a worthwhile product.



Conference on Antarctica

AT the request of the Department of State, the National Academy of Sciences has appointed a committee of six distinguished scientists, headed by Dr. Laurence M. Gould, President of Carleton College, to advise the United States Delegation to the Conference on Antarctica.

All the individuals selected for this committee by Dr. Detlev W. Bronk, President of the Na-

tional Academy of Sciences, have an active interest in the scientific investigations which are being carried out in Antarctica. Because of their experience and background they will be able to assist the Delegation in matters which may arise involving science.

The other members of the committee are Dr. Francis W. Reichelderfer, Dr. Lloyd V. Berkner, Dr. Merle A. Tuve, Dr. Harry Wexler, and Mr. Albert P. Crary.

The U. S. delegation will also receive advice directly from the National Science Foundation, the government agency responsible for coordinating the planning and management of the U. S. scientific program in Antarctica.

MIC Conference

DURING the last two weeks in September the Regional Administrative Officer, District Meteorologists, and selected MICs, together with a few Central Office people, met at the Weather Bureau's new training center to formulate material to be used at the Regional Administrative Offices for conferences on station supervision. All these lectures and proceedings were tape recorded. The lectures included titles such as: Communications; Problems of Recommendations and Evaluations; the MIC as a Part of Personnel Management; Utilization of Employees; The Development of Employees; The MIC's Role in Public Relations; Completed Staff Work and the MIC; The Budget Process; The MIC's Place in the Aviation Program; Proposed Forecast Organization; Programming Activities for Optimum Service; Relations with Other Agencies; Are Weather Bureau Forecasts Useful for My Operations?; and Weather Bureau Research.

Several training techniques were tried out and evaluated.

The Training Section is now in the process of preparing material from the large amount of information and suggestions collected during the two-week period. This will be used in the MIC conferences to be held at the Regional Administrative Offices in the near future.

Briefs from the CO Friday Staff Conference

DUE to conflicting interdepartmental meetings on Friday afternoons and absence of several Central Office officials on field trips the staff conferences during October were mostly on an "ad hoc" basis. One of the major subjects was the contract provisions for the Bureau's hurricane research aircraft and progress on the installation of equipment in the aircraft. A complete description of these flying laboratories and the programs on which they will be used will be described in an early issue of TOPICS. Among other subjects of general field interest are the following:

Meeting of Weather Bureau Advisory Committee. It was announced that during the first week of November the Weather Bureau Advisory Committee, chaired by Dr. Byers, and consisting of Drs. Charney, Malone, Ference and Johnson (President of the University of New Hampshire) will meet at the Central Office to discuss in particular matters relating to personnel recruitment and training. More on this subject will be included in a subsequent issue of TOPICS.

Thermo-electric Generator powered by a Strontium 90 Isotope. Automatic weather stations for uninhabited areas of the world where meteorological information is scarce are now within sight under a Weather Bureau development program already underway. A 100 thermal watt Strontium-90 generator which will continuously supply 5 watts of electrical energy over a two-year period is now under contract, with the Weather Bureau and AEC cooperating in the financial support.

The continuous 5-watt output will act as a trickle charger for a long life Nickel Cadmium battery which can be called upon to deliver approximately 500 watts of energy for a one-minute period every three hours. Such a generator will be one of the first civilian uses for atomic energy and will overcome the power problem always encountered in any previous remote unattended automatic weather station designs.

The design of special meteorological instrumentation and radio telemetering equipment is currently being investigated with a view toward having a complete isotopic powered automatic weather station which can be field tested in the Arctic by next year.

Certain other subjects discussed in staff conference are presented in other feature articles in this issue.

The Space Problem

A practice that may be of interest to other MIC's has been extracted from a report to the Central Office and is as follows:

We usually plot only a sectional surface chart and use facsimile recordings to obtain the general weather picture.

When it becomes advisable to plot more widespread information we use a standard base map, then later, after the full size map has served its purpose, we cut it to the size of the sectional chart retaining the portion of interest.

This procedure cuts down on the space required for posting and filing.

Half a Career

By Roy L. Fox

AT ten minutes to eight on the morning of October 10, 1938, a recently created ex-school teacher climbed four flights of stairs in the Federal Building of a midwestern city for his first day of duty with the United States Weather Bureau. Thus it is, that last Saturday he completed 21 years of employment with this segment of the Federal Government whose watchword is "Service to the People and the Needs of the Bureau above Personal Preferences."

These have been interesting and challenging years. They have brought nine transfers and as many promotions, although each of the latter has not been coincident with one of the former. They have also meant assignments in six states and the two territories, which, since the assignments, have become the 49th and 50th states.

During that interval of 21 years, the briefest period this employee was assigned to one station was five months and the longest, six years. Also, the shortest time spent in one grade was one year and the longest, to date, four and a quarter years. In that time the annual salary for one in the GS-2 grade, the starting level for beginning observers in 1938, has advanced from $1440 to $3255. This may not be too significant though, for in that same period the price of hamburger has advanced from 15 cents a pound to 55 cents, eggs from 12 cents a dozen to 60 cents and new six cylinder American-made sedan-style automobiles from $650 each to $2500 each.

Twenty-one years have meant a marked transition in the realm of meteorology; from forecasters making their predictions from self-plotted and self-analyzed maps containing data transmitted in a word code via telegram for an area smaller than the United States to numerical weather predictions for adaptive forecasting by state and local forecasters utilizing data transmitted in numerical codes and obtained for the surface and upper levels of the atmosphere throughout the Northern Hemisphere by the latest electronic instruments; from adding-machine tape treatment of data for climatological purposes to more complex operations performed by feeding punch cards and magnetic tape through electric and electro-magnetic computers; and from a prime consideration of weather on a regional basis to the treatment of weather on a hemispheric and world-wide basis.

Twenty-one years ago, air mass and frontal analysis was just coming into its own, the dynamic approach to the study of the atmosphere was in its infancy and kites and aircraft for upper air sounding purposes were just beginning to be replaced by radiosondes. Radar was unheard of, as were constant level balloons, rockets, and satellites for meteorological purposes. 200-word-per-minute teletypewriter transmissions, facsimile weather transmissions, and automatic weather systems were also no more than figments of the imagination 21 years ago.

In 1938 it was a cardinal sin to file a weather observation late. A missed weather observation meant a letter to the errant observer from the Chief of the Bureau and errors in sea level pressure on two observations in one month led to a strong reprimand. Some compensation, though, were such things as having to report winds to only eight points of the compass and not to tens of degrees, of only having to indicate that the pressure was either steady, rising, or falling and not that it was doing this ∿ or this ⋁, and of having to indicate only that a cloud was one of nine kinds instead of having to report the various states of the sky and the many cloud types, and bases and directions of each.

But then, back in those days, people were not entrusting their lives to aircraft crews piloting air frames through the skies at 450 miles per hour and 35,000 feet above sea level. Neither were travelers scooting across the continent in five hours and meteorologists weren't providing climatic information and predictions for offshore oil operations and for direct seeding of forest areas. Also, five-day forecasts and 30-day outlooks for the farmer, the contractor, and the manufacturer were unavailable.

These 21 years have provided a liberal education in geography, history, sociology, anthropology, meteorology, and human behavior. They have left a memory of a fleeting moment in an aircraft at an indicated altitude of 20,300 feet so close to the summit of Mt. McKinley in Alaska that it seemed one could reach out and touch it; of raising chickens and gardening in the outskirts of Anchorage and feeling the surge of a 25-pound king salmon as it took the lure in an Alaskan stream; of seeing the green flash in the sky just as the sun sank below the horizon over Diamond Head Crater in Hawaii. Vivid too, are the memories of hours spent enroute to and from, and at, the Weather Bureau's Mauna Loa Observatory at 11,000 feet above sea level on the world's largest single mountain mass; of long stretches of flight over the Tropical Pacific Ocean; of looking for sea shells and coral on the beaches of the tropical islands of the Trust Territory of the Pacific, of the Weather Bureau's efforts at, and success in, training the Micronesian natives of the islands of the Trust Territory and the resi-

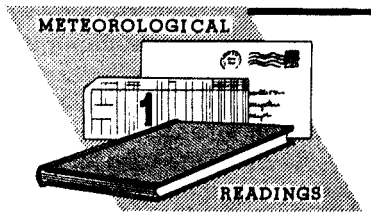
dents of the Territory of Guam to become competent weather observers.

Impossible to erase is the memory of the early morning take-off of an Omaha-bound aircraft from the Tulsa Airport just prior to the end of the mid-shift; of the bugle clear call of the meadow lark on a crisp spring morning at Topeka at the time of the 6:10 a.m. observation; of the fog and stratus drifting in over the Atlanta Airport and then, on occasion, so rapidly moving out with the passage of a warm front and of the beauty of this southern city; of fighting sleep on mid-shifts; of going home at midnight from the evening shift in Anchorage in mid-summer and hearing the sound of hammers as they were plied in the twilight by people working double shifts in building houses to beat the anticipated early arrival of winter.

Too, to help one to pass the time on evenings, are the memories of trout fishing and farming on a small scale in mountainous Montana, of deer having to be driven from the landing area of the Billings Airport in the fall season to make the night landing of aircraft less hazardous; of all employees at WBAS Great Falls pitching in to paint the Weather Bureau quarters when paint could be supplied but funds were unavailable for hiring the painting done; of the move of a forecast center in Montana and the construction and activation of a tropical mountain observatory in Hawaii; of taking an observation in an extremely heavy rain on the roof of the Airport Administration Building at Atlanta when the water stood more than four inches deep because the gutters couldn't accommodate the accumulation of water; of the clear, crisp, bell-like ring of snowflakes, crushed against others, as one trudged through the white mantle on the way to work on the mid-shift on a winter's night when the mercury stood at the minus 38° Fahrenheit mark and when the car wouldn't start despite the efforts to keep the oil in the engine in a liquid state with a kerosene Bunsen-type burner. There will also, of course, be the recollection of assisting with the release of a rawinsonde balloon in a 40 MPH chinook wind over an ice-covered taxi strip so cold from radiation that it was turned into a veritable skating rink because of freezing from below almost as rapidly as the warm wind melted the snow from above.

Knowledge of the exhilarating beauty of mountainous Western North Carolina, great stacks of weather records, files upon files of punch cards and machine processing of data at Asheville add to the enjoyment of work in the Bureau as does the warm feeling that comes from reflecting on the camaraderie shared on mid-shifts under trying circumstances and of the concern which the Chief and other top officials of the Bureau have for the individual employee.

You ask; "Would you have joined the Weather Bureau if you had it to do over again?" The answer is a firm, yes! You also ask; "Would you have transferred so many times if you were faced with it again?" The answer to this question is a resounding, you bet! How else could all of the above mentioned, and many more, worthwhile experiences and memories of them have been packed into the first half of a Weather Bureau career?



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information, see TOPICS May 1957.

Assignment No. XXXI: Tornadoes and Related Phenomena by Edward M. Brooks on pages 673 to 679.

About the Assignment: This is a descriptive article on tornadoes covering climatological and synoptic aspects. Participants who are interested in tornado forecasting will find up to date information plus a good bibiliography in Forecasting Tornadoes and Severe Thunderstorms, published by the Weather Bureau in 1956.

Col. 61. What practical action would cut down the amount of injury and death during tornadoes?

1. Use of protective headgear
2. Careful observation of the barometer
3. Get in a car and drive away
4. Legislating against brick buildings

Col. 62 In what season do tornadoes occur most frequently in the U. S.?

1. Summer
2. Fall
3. Winter
4. Spring

Col. 63 What type of cloud must be present before a tornado occurs ?

1. Cumulus
2. Nimbo-stratus
3. Strato-cumulus
4. Cumulo-nimbus

Col. 64 Over what countries are tornadoes most frequent?

1. Russia and Spain
2. Algeria and New Zealand
3. United States and Australia
4. Brazil and Argentina

Col. 65 During what portion of the day are tornadoes most frequent?

1. Morning
2. Afternoon and evening

3. Night
4. Around midnight

Col. 66 What portion of buildings in the path of tornadoes sustains the greatest damage?

1. Upper floors
2. Basement
3. Main floor
4. Southwest corner of first floor

Col. 67 What section of the United States does the author designate as having the greatest frequency of tornadoes?

1. West Coast
2. Gulf States
3. New England States
4. Middle United States

Col. 68 What type of air motion is almost always prevalent near the ground in a tornado?

1. Cyclonic rotation
2. Anticyclonic rotation
3. Straight inflow
4. Straight outflow

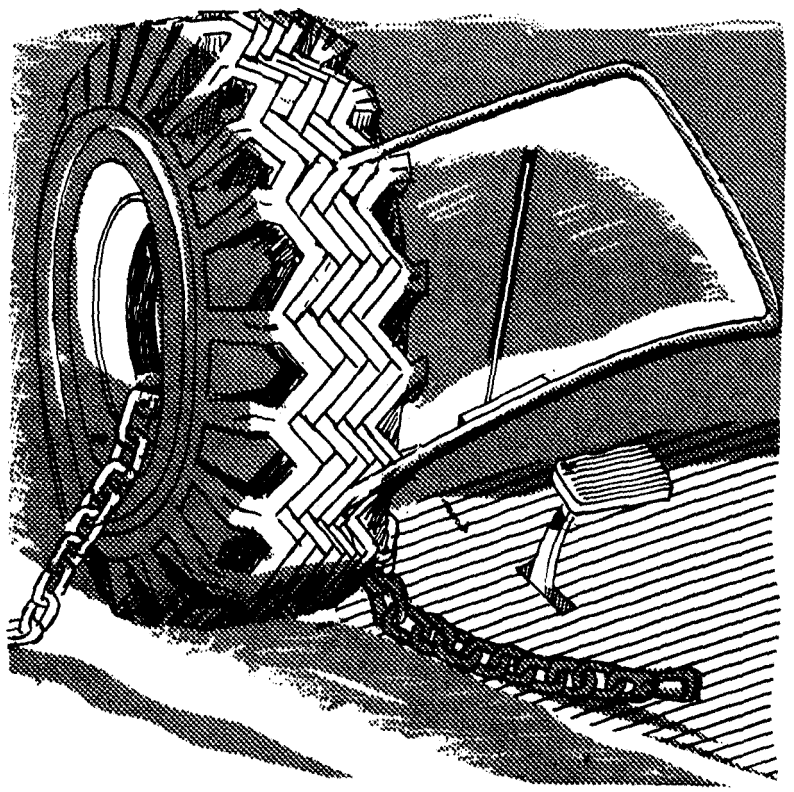
Col. 69 What range of speed of translation of the tornado funnel has been observed?

1. 25 to 100 mph
2. 0 to 150 mph
3. 5 to 75 mph
4. Less than 100 mph to more than 300 mph

Col. 70 Which phenomenon is not often seen in the vicinity of tornadoes?

1. Radiation fog
2. Hail
3. Rain
4. Lightening

Six Tips for Safe Winter Driving



Accept Your Responsibility — Do all in your power to drive without an accident. Winterize your car, yourself and your driving before winter comes. Don't blame the weather for an accident — you are the only one who can avoid getting yourself into trouble.

Use Good Tires and Tire Chains — Whether you use regular tires or snow tires, be sure the tread is in good condition and not worn smooth. Use reinforced tire chains on snow and ice, since they cut stopping distances about half and give 4 to 7 times more traction than regular tires. BUT, even with the help of the best snow tires or tire chains, slower than normal speeds are a must on snow and ice.

Keep Your Windshield and Windows Clear — Clean all the snow and ice off your windshield and all other windows on the side and back of your car. Be sure your windshield wiper blades are in good condition and that they do not streak. Wipe off the inside of all your windows and make sure your heater and defroster are working properly. You have to see danger to avoid it. Don't forget, danger may approach from the sides or rear as well as from the front.

Get the "Feel" of the Road — Try your brakes occasionally while driving slowly and away from traffic. Find out just how slippery the road is and adjust your speed to road and weather conditions. Remember, you can't stop on an icy dime.

Follow at a Safe Distance — Keep well back of the vehicle ahead — give yourself plenty of room to stop. Remember, it takes 3 to 12 times as far to stop on snow and ice as on dry pavement. It's hard to explain why you couldn't stop when the other fellow did.

Pump Your Brakes — On snow and ice, the best technique for stopping quickly and with full control of your car, is fast up-and-down pumping of your brakes. Jamming and "freezing" on your brakes is almost certain to lock your wheels, and is apt to throw your car into an uncontrollable and dangerous skid.

Forecasters' Forum

Period of Forecast Covered by the 0400 GMT FP

It was recently proposed that the State Forecasts (FP's) released at 0400 GMT routinely include the forecast for the "tonight" period. With tomorrow 7 hours away in the East and 10 hours in the West it was felt that we were not able to realize full benefit from what should be the most reliable part of the forecast.

Comments have now been received from the District and State Forecast Centers. Of the 28 centers replying 10 were definitely in favor of the idea and 8 were equally definite in their unfavorable response. Ten forecast centers submitted qualifying views along the line that they did this anyway if meteorologically important.

It appears that the best way to handle the problem is to work within the instruction as now written and to encourage each forecaster to use discretion in making "tonight" a part of the forecast. "Tonight" should be included at all times when it adds to the usefulness of the forecast and especially when its omission might cause the public to go unnotified of an important weather change. A good Rule of Thumb for the forecaster would be, if there is any doubt, include it.

As to the question of length of forecast, a quote from WB Manual III-B-1107-c says, "While economy in words is a consideration, ... it is not wise to sacrifice clarity in order to save words."

Our survey indicates that the real value of the "tonight" forecast must accrue from the local forecast office. Since it is a highly perishable product, the forecast for tonight should originate as close to the distribution source as possible. For this reason, the local office should frequently supplement the FP guidance material in this portion of the forecast.

Moving Ship Wind Observations

THE following is well known to experienced analysts, but I think that it should be restated for the benefit of those who have not spent much time on ocean analysis. We all know about some of the special types of errors in ship synoptic reports, such as errors in transmission of the ship's position, consistent pressure errors due to improper adjustment of the barometer, etc. Sometimes everything seems to fit except the wind. Wind direction at sea is usually determined by such indicators as smoke, a flag, wind vane or wind driven waves. The last would directly indicate the true wind direction in the absence of appreciable ocean current but all of the other indicators must be to scale along with the ship's movement to yield the actual wind direction. Sometimes the ship's observer neglects this important operation. Since the indicated wind is the resultant of the effective wind due to the ship's motion plus the true wind, the true wind is determined by vectorial subtraction of the effective wind due to the ship's motion from the indicated wind. (Put the tails of these two vectors together and draw the true wind vector from the head of the vector representing the effective wind due to the ship's motion toward the head of the indicated wind vector. If this is confusing you can understand that the ship's observer may also be confused on occasion.) In the occasional instances when the ship's wind doesn't seem to fit the analyst should plot the vectors on a piece of scratch paper and I think he will find that the wind will then fit, in most cases.

William G. Duggin
WBAS Fairbanks, Alaska

Length of Service Awards

15-Year Awards

Portland, Oregon RFC
Donald W. Kuehl
Pueblo, Colo. WBAS
Richard L. Johnson
Richmond, Va. WBAS
Edward G. Jacob
Roanoke, Va. WBAS
William E. Mac Gregor
Salt Lake City, Utah RAO
Ruth R. Zastrow
Sioux City, Iowa WBAS
Isadore Lieberman
Delbert A. Unger
Stampede Pass, Wash. WBO
George B. Foster
Swan Island, W. I.
Henry A. Glidden
Tucson, Arizona WBAS
Eileen T. DeLaurentis
Wilmington, N.C. WBAS
Winston L. Hurst
Ypsilanti, Michigan
George M. Wendel
Oakland, Calif. WBAS
Keith G. Hine
Oak Ridge, Tenn.
Geraldine L. Addison
Oklahoma City, Okla.
Gerald J. Carter
Portland, Maine WBAS
Dolores Winslow

Suggestion Award Winners

Lucy G. Kirchner $15
RAO New York
Improved handling of coded qualification records of employees.

Wendell E. Cowdrick $15
DMO Kansas City
Reporting procedure for change in description of a substation.

Helen E. Maxfield $25
WBAS Salt Lake City
A mechanical drafting pencil and special pencil pointer for use in radiosonde work.

Adolf V. Kolitsch $15
WBAS Seattle
Discontinue an unused telephone line to the ceilometer at Seattle.

Nelson M. Kauffman $20
WBAS Harrisburg
Printing of LCDs.

James L. Ripps $15
RAO Kansas City
A 2 inch instead of 2½ inch cable terminal cable terminal chamber for transmissometers.

Stella M. Santaniello $10
RAO New York
Discontinue one copy of Form SF-50 in retirement cases.

Fred R. Maher $15
WBAS Indianapolis
Improved instructions for checking Forms WB-612-13.

Dorothy Campbell and $10
Lester Snyder each
RAO Ft. Worth
RAO use telephone directories from cities where we have stations to get names and addresses of contractors when issuing bid invitations.

Virginia Woolley $25
RAO Salt Lake City
Issue Form 450-1 as separate pages.

Wallace M. Irgens $25
WBAS Helena
Publish the cost of certain repairable items to encourage repair rather than replacement.

Harry R. Houghton $10
WBAS Binghamton
An improvement in Circular N instructions.

Alfred Eisgrou $20
WBAS Athens
Monthly adjustment of number of LCDs printed.

Charles S. Shoemaker $15
WBAS Allentown
Width of columns on Form WBAN-10B.

Marvin H. Hofer $15
WBAS Oakland and each
Forest D. Paxton
WBAS Long Beach
Arrangement of items on Form WBAN-10B.

Rheinhart W. Harms $10
Office of Program Planning
Discontinue purge cards for Monthly Weather Review.

William L. Raynore $15
Silver Hill
Column headings on Form WBAN 10-B.

Jack W. Kepner, Jr. $15
WBAS Topeka
An algae preventive for evaporation pans.

Mary A. Norris $15
Procurement & Supply Section
Use an electric stylus to engrave the property number on instruments.

Constance D. Plater $15
JNWP
A work-progress card to keep track of progress in certain computer jobs.

Kenneth L. Hein $10
WRPC Chattanooga
Special machine-tabulation cards Hourly Surface Observations summary.

Richard M. Greening $15
RFC Augusta
Improvements in Form 652.2-5.

Vivian M. Moehlman $10
RFC Cincinnati
Reduce filing space required for messages containing river forecasts.

Sam Stein $20
RAO New York
Suppliers write the weight on reels, cartons, and crates of cable.

David L. Powel $15
WBAS San Francisco
RAVU discontinue sending erroneously punched cards back to stations with error letter.

Charles H. Newton $20
WBAS Texarkana
Provide shorter carbons in Form 400-5 so that signature will not show on wrong copies.

Max K. Bankert $10
WBO Los Angeles
RAO circle any corrections made on time and attendance reports.

George W. Polensky $25
WBAS Chicago
An indicator light on the WSR-3 Radar generator.

Billy Hartsfield $15
RAO Ft. Worth
Omit expendable items from Form 2007b.

Robert N. Craig $25
RFC, St. Louis
Stations open less than 24 hours discontinue daily announcement on RAWARC of their hours of duty.

Clarence L. Kibler $25
F&SR Division
Use addressograph machine in NAWAC to label facsimile charts.

Truman P. Dingeldein $15
WBO Cairo
Discontinue sending weekly and monthly word by wire since it appears on Service "C".

Joseph C. Ofenloch $15
RAO Kansas City
Improved instructions for writing job-descriptions.

Emarhetta W. Smith $15
Personnel Operations Section
Discontinue the list formerly sent with groups of personnel folders forwarded to Federal Records Center.

George B. Hummer $15
WBAS Topeka
Improvement of Form 612-24B.

Leslie W. Bosworth $10
Employee Relations Section
An abbreviated telegraphic address for Federal Records Center at St. Louis.

Carl L. Frey $20
Budget & Management Div.
Centralized transcribing equipment to be used by telephone.

Kenneth L. Hein $10
WRPC Chattanooga
Use different-colored cards for correction-punching of erroneous cards.

Roy A. Wells $10
WRPC San Francisco
WRPC discontinue sending RAOs a list of personnel folders sent to Federal Records Center.

James I. Elliott $15
Communications Editing Unit
Use both WBC and RSSC in address of messages sent via RAWARC to RSSC outside of regular hours.

Paul R. Jones $15
RFC Tulsa
Design of an automatic reporting raingage.

Harry Raynes $15
WBAS Augusta
Supply card forms WB 612.13-2 separately instead of in pads.

Harold E. Lami $15
WBAS Mobile
Use of Jet Navigation Charts for briefing purposes at selected stations.

Unused Sick Leave

THIS list is made up of names submitted directly from each station or office. If there are employees at your station who have accumulated more than 1,000 hours of sick leave and whose names have not been published please let us know.

Albany, N. Y. WBO
John B. McCarthy
Helen E. Senter

Buffalo, N. Y. WBAS
John F. Feeley

Central Office
A. K. Showalter

Charleston, S. C.
J. A. Cummings
E. J. DeVeaux
Annie L. Gale
Walter R. Hall
T. L. Ogilvie
E. L. Paquet
S. K. Parrish

Dallas, Texas WBAS
Clem D. Richardson, Jr.

Detroit, Mich. WBAS
(Detroit Metropolitan Wayne Co. AP
Harry B. Emerson, Jr.
Frank H. Grabowski
Trent V. Hilkey
John S. Hill
W. W. Oak
Floyd H. Pearson
Harold J. Rothrock

Detroit, Mich. WBAS
(Detroit City Airport)
C. J. Doetker
John A. Mikina
Frederick Miles
Fred T. Moser

Detroit, Mich. WBAS
(Willow Run Air Terminal)
George R. Borders
Francis J. Pott
Hal F. Reideman
Leland Vandecar
George M. Wendel

Guam WBO
Ah Kin Leong

Honolulu PSO
Nels E. Johnson
Andrew C. Wall

Honolulu WBAS
Dempster R. Tredway

Miami, Fla. WBAS
Arne J. Erickson
Elbert C. Hill, Jr.

Miami, Fla. DMO
John G. Boyd

Minneapolis, Minn. WBO
Joseph H. Strub, Jr.

Nashville, Tenn. WBAS
Raymond Burgess
Robert Dickson
Jack Merryman

Philadelphia, Pa., WBAS
Albert A. Dubin
Herbert S. Groper

Philadelphia, Pa. FIU
John E. Foster
Omer E. Murray

St. Joseph, Mo. WBAS
Sarah I. McReynolds
Wilbur W. Wray

NEW MIC'S

LEONARD E. SABIN has been selected to serve as Official in Charge at WBAS Blue Canyon, succeeding Richard E. Hambidge.

Mr. Sabin entered the Weather Bureau December 19, 1955, as Meteorological Aid at Rapid City, South Dakota. His subsequent assignments include Cold Bay, Alaska, Kotzebue, Alaska, and San Francisco, California.

JOE O. ENNEBERG has been selected to succeed S. Thomas Anderson as MIC at WBO Burns, Oregon.

Mr. Enneberg began his career with the Bureau at Burns in December 1956. His conscientious and efficient service since that time has proved his ability to handle the administration of the Burns station.

NEW OIC

MAX H. BAUMGARTNER has been selected to succeed George B. Foster as Observer in Charge at Weather Bureau Office Stampede Pass, Washington.

Mr. Baumgartner entered the Bureau at Stampede Pass in August 1955. His efficient participation in the observational and maintenance programs of this isolated station during his four-year assignment makes him well qualified to assume charge of the station.

RETIREMENTS

Talmadge L. Banister

TALMADGE L. BANISTER, Map Charting Supervisor in the Weather Bureau office, New Orleans, retired October 31 after nearly a quarter century of government service.

A native of Louisiana, Mr. Banister graduated from Mt. Hermon (Louisiana) High School and attended Mississippi State College. He entered the Weather Bureau as a Junior Observer at

Big Spring on November 2, 1931, and later served at Kingman, Winslow, Memphis, Wichita, and Texarkana before going to New Orleans in 1945. Except for a few short periods when he resigned to return to his home in Arkansas, he has been continuously employed by the Weather Bureau.

Mr. Banister has returned to his farm in Arkansas where friends may contact him at Route 3, Box 223, El Dorado.

Earl E. Shay

EARL E. SHAY'S retirement on October 31 from his position as Assistant Foreman for Photography in the Central Office Printing Section terminated a career of 40 years dedicated to the art of photography, which included more than 27 years of government service.

Mr. Shay was born in Grant, Michigan, and graduated from Big Rapids, Michigan, High School. He served in the Infantry as a Supply Sergeant during World War I, and returning to Michigan following discharge from military service in 1919, he commenced his career as an assistant in a commercial photography shop in Muskegon. From 1921 to 1932 he operated his own portrait studio. His government service dates back to 1932 when he accepted an assignment as photostat operator with the Patent Office. Mr. Shay transferred to the Department of Agriculture in 1933 where he was employed as a photographer until he joined the Weather Bureau on June 16, 1942. A highly skilled photographer, Mr. Shay combined a warm, pleasant personality and the ability to produce quality work with outstanding speed and accuracy to win the respect and admiration of all with whom he was associated during his many years of service with the Weather Bureau. Mr. Shay plans to maintain his residence in Washington where friends may contact him at 5219 P Street, S.E.

Deaths

Ralph C. Mize

RALPH C. MIZE, Official in Charge at Buffalo when he retired April 30, 1942, died October 9 in Los Gatos, California, at the age of 83.

Mr. Mize entered the Weather Bureau in the Central Office on November 22, 1901. He subsequently served as Assistant at Portland, Oregon, and Official in Charge at Tatoosh Island, Baker, and Juneau before transferring to Buffalo in August 1940.

Mr. Mize is survived by his wife, three sons, and two daughters. The family home address is 17813 South Kiowa Trail, Los Gatos, California.

Paul S. Cook

PAUL S. COOK, former MIC at Lake Charles, died October 15 in Memphis, Tennessee, at the age of 58. Mr. Cook retired on disability July 31, 1958, after more than 38 years of government service. An article on his retirement was published in August 1958 TOPICS.

Mr. Cook is survived by his wife who resides at 3798 Faxon Avenue in Memphis.

Urban A. Wacker

URBAN A. WACKER, Electronic Technician, en route from Quintero, Chile, to a new assignment in Burlington, Iowa, lost his life in an airplane crash in Texas September 29.

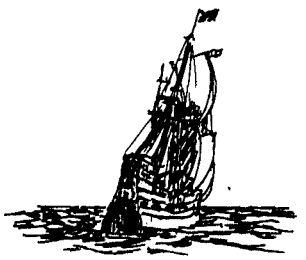
Mr. Wacker was one of five Weather Bureau employees who participated in the IGY Upper Air Program by serving as resident technicians at the Cooperative Rawinsonde Stations established in South America. In March 1959 he was recipient of an award for $150 granted to each of the five technicians in recognition of their excellent work and important contributions to the South American program.

The Wacker family left Quintero on September 21 for Texas. Mrs. Wacker and the children remained in Pasadena, Texas, with relatives while Mr. Wacker proceeded to Burlington to report for duty. He departed from Houston by plane the evening of September 29 and met his death when the plane crashed near Buffalo, Texas, just half an hour after take-off.

Mr. Wacker was born in Le Center, Minnesota, on April 24, 1915. He graduated from Le Center's McKinley High School and attended the University of Minnesota. He entered the Weather Bureau as a Junior Observer at Omaha on February 18, 1942, just a few months before receiving his call for military service during World War II. He attended Forecasters' School and served in the Air Force as an Observer and Forecaster from May 1942 until February 1946. Upon his discharge from the Armed Forces he returned to duty at Omaha where he remained until October 1956 when he transferred to Sault Ste. Marie as Electronic Technician. He served at this station until his transfer to the IGY program early in 1957.

Mr. Wacker is survived by his wife and four children, who are residing for the present at 1707 Marguerite Lane, Pasadena, Texas.

After the first harvest of the New England colonists in 1621 Governor Bradford made provision for a day of thanksgiving and prayer. In 1623 a day of fasting and prayer in the midst of drought was changed into thanksgiving by the coming of rain during the prayers. Gradually the custom prevailed of appointing thanksgiving annually after harvest.



(Probably the first verses written by a colonist:
circa 1630. Author's name unknown.)

New England's annoyances, you that would
know them,
Pray ponder these verses which briefly do
show them.

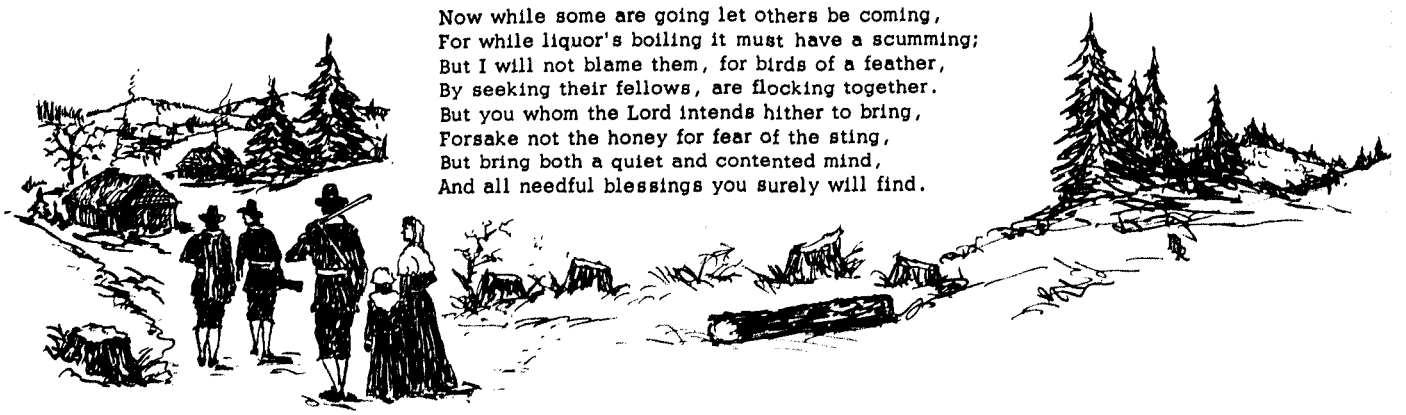
The place where we live is a wilderness wood,
Where grass is much wanting that's fruitful and good:
Our mountains and hills and our valleys below
Being commonly cover'd with ice and with snow:
And when the northwest wind with violence blows,
Then every man pulls his cap over his nose:
But if any's so hardy and will it withstand,
He forfeits a finger, a foot, or a hand.

But when the spring opens, we then take the hoe,
And make the ground ready to plant and to sow;
Our corn being planted and seed being sown,
The worms destroy much before it is grown;
And when it is growing some spoil there is made
By birds and by squirrels that pluck up the blade;
And when it is come to full corn in the ear,
It is often destroy'd by raccoon and by deer.

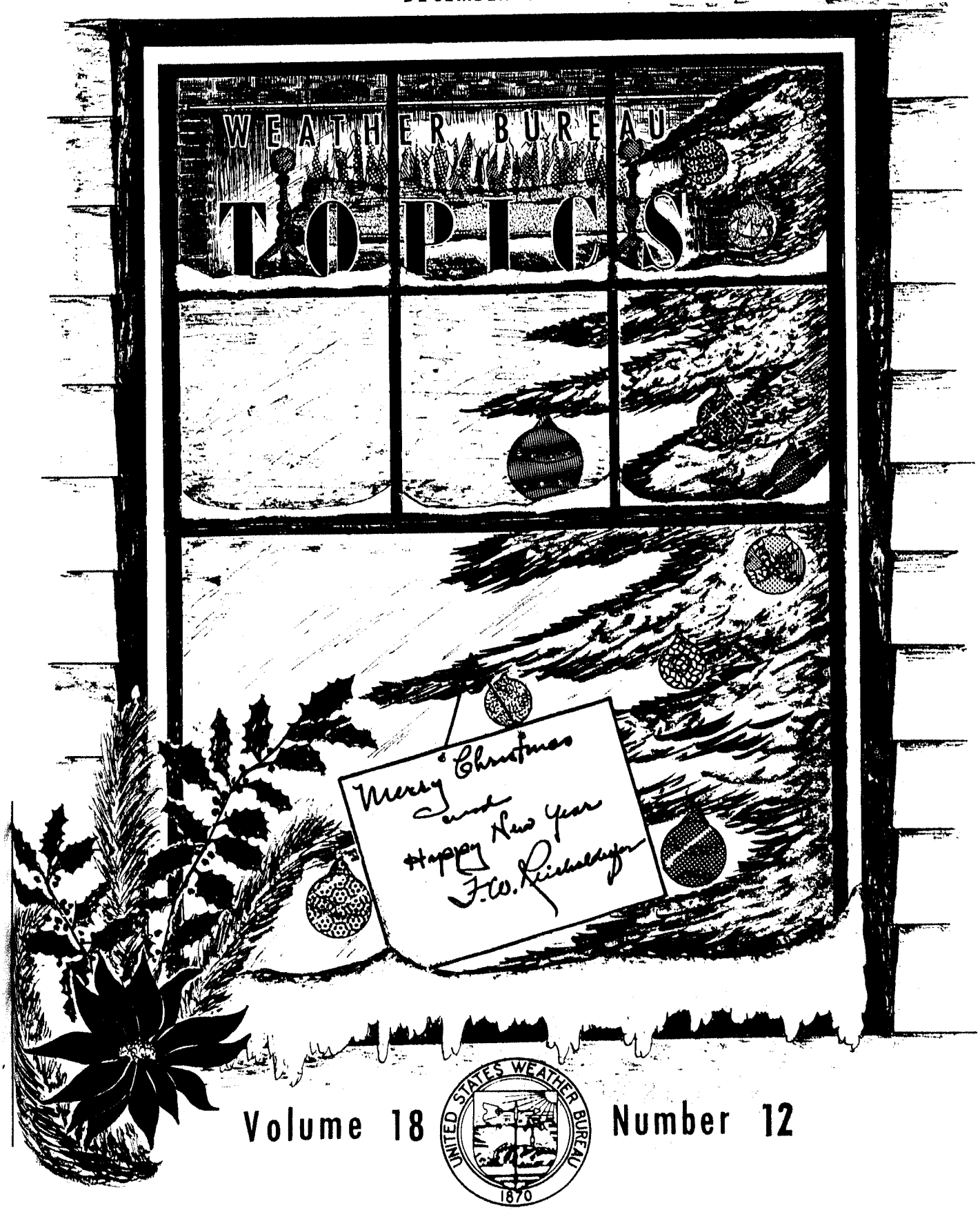
And now do our garments begin to grow thin,
And wool is much wanted to card and to spin;
If we can get a garment to cover without,
Our other in-garments are clout upon clout:
Our clothes we brought with us are apt to be torn,
They need to be clouted soon after they're worn;
But clouting our garments they hinder us nothing,
Clouts double are warmer than single whole clothing.

If fresh meat be wanting, to fill up our dish,
We have carrots and pumpkins and turnips and fish:
And is there a mind for a delicate dish,
We repair to the clam banks, and there we catch fish.
Instead of pottage and puddings and custards and pies,
Our pumpkins and parsnips are common supplies;
We have pumpkins at morning and pumpkins at noon;
If it was not for pumpkins we should be undone.

Now while some are going let others be coming,
For while liquor's boiling it must have a scumming;
But I will not blame them, for birds of a feather,
By seeking their fellows, are flocking together.
But you whom the Lord intends hither to bring,
Forsake not the honey for fear of the sting,
But bring both a quiet and contented mind,
And all needful blessings you surely will find.



DECEMBER 1959



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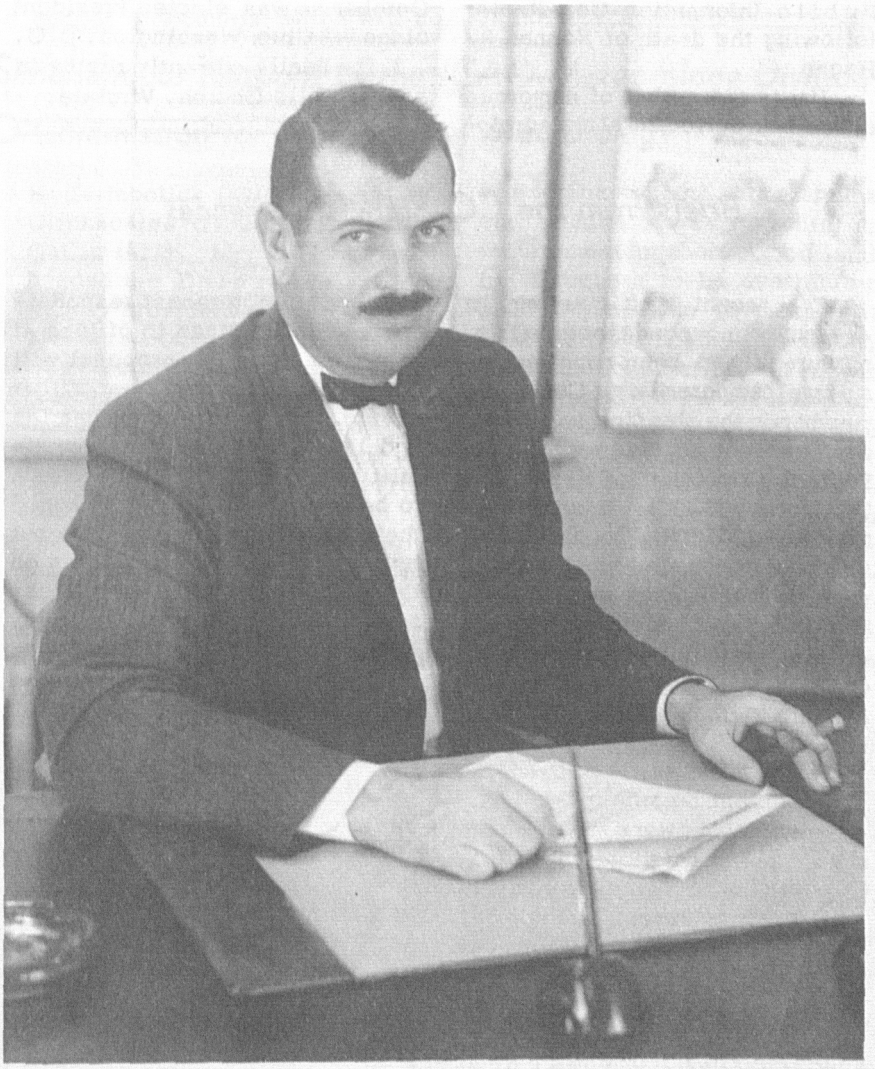
WEATHER BUREAU TOPICS is published monthly to inform all employees about newsworthy operations and work programs of the Bureau; to give background on instructions; to carry news of new personnel assignments, retirements, deaths, and similar information about employees; and to serve as a medium through 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.

PUBLIC INFORMATION COORDINATOR

James M. Beall



JAMES M. BEALL's appointment in October as Public Information Coordinator highlights a diversified career in the Weather Bureau.

A native of Idaho, Mr. Beall attended high school in Boise and the College of Idaho, where he received a B. A. in mathematics in 1938. Mr. Beall joined the Bureau in 1940 as a junior observer on Tatoosh Island. From 1941 to 1942 he attended Massachusetts Institute of Technology on a scholarship in meteorology under the first Civilian Pilot Training Program.

Upon completion of this training in 1942, his first assignment was as Forecaster at Fairbanks, Alaska and shortly thereafter at Juneau, Alaska. It was at Fairbanks that Jim met Edith Ohman, a school teacher there. In July of 1943 they were married in Juneau. Their two daughters, Mary Ann and Susan, were both born in what was then the Territory of Alaska.

His work in polar meteorology in Alaska led to an assignment as the Weather Bureau's representative on the United States Antarctic development project (Task Force 38) during the winter of 1947-48.

Jim was one of the first men to cross both the Arctic and Antarctic Circles. While in Antarctica he became President of the first chapter of the American Meteorological Society on that continent.

A short appointment as Supervising Forecaster in Montana was followed by an assignment in Athens, Greece as Meteorological Consultant to the Civil Aviation Technical Assistance Group in 1949. Jim attended the Region VI meeting of the World Meteorological Organization in London in 1949, the Meteorological Division Meeting of the International Civil Aviation Organization in Paris in 1950 and the First Congress of the WMO in Paris in 1951.

Jim returned in 1953 to the Central Office where he was selected to work under the late Dr. Ivan R. Tannehill in the Forecast Division as a special assistant to head the Bureau's Agricultural Meteorological Program. In 1956 he was named Chief of the Public and Agricultural Forecasts Section of the Forecasts and Synoptic Reports Division.

During this period he worked actively to plan, develop, and initiate an agricultural meteorological program for the Bureau which included the establishment of the Agricultural Meteorology Institute -- a cooperative venture between the Bureau and the University of Maryland. He was a working member of the National Academy-Agricultural Research Institute and a member of the WMO Commission for Agricultural Meteorology.

In 1957 Jim left the Bureau to join the International Cooperation Administration as a Meteorologi-

cal Advisor on the Agricultural Field Party, U.S. Overseas Mission, to assist the existing weather service in Bolivia.

He returned to the Weather Bureau this year and was named Public Information Coordinator following the death of Norman R. Hagen.

Jim is the author of numerous articles on agricultural meteorology. He is a member of the American Meteorological Society, The Royal Meteorological Society, the International Society for Bioclimatology and Biometeorology and the American Geophysical Union. In October he was elected President of the WB Club, Washington, D.C.

The Bealls currently reside in nearby Falls Church, Virginia.

Briefs from the CO Staff Conferences

AT a recent staff meeting, it was announced that the Chief of Bureau had been appointed to serve temporarily as Commerce member on the standing committee on Atmospheric Sciences of the Federal Council of Science and Technology (FCST). Under Secretary Ray (TOPICS, October 1959) is the Department of Commerce representative on the Council. The Federal Council of Science and Technology is headed by Dr. G. B. Kistiakowsky, Special Assistant to the President for Science.

The post was created to advise the President on science and was given broad powers to determine research and development priorities in the Federal Government.

In order to keep in the forefront of the science of meteorology the Chief stressed the importance of accenting the Bureau's well developed and far-reaching research and development programs to this group.

The forecast reorganization plan proposed by the Forecasts and Synoptic Reports Division has been on the agenda twice during recent months. Mr. Vernon in his first presentation outlined the existing forecast system and explained how the present system developed. He stated that lack of funds halted the expansion of the "state" forecast program. The proposal, which met agreement in principle, was for a "two-state plan" in which the basic district and aviation forecast responsibility will be given to offices at 26 cities. The new proposal will not greatly affect the larger offices having SELS, hurricane and marine and lake forecasting responsibilities. Many details still remain to be worked out, but it is hoped that the new scheme will be put into effect in several offices on the west coast and in the Rocky Mountain areas by early in 1960. A target date of July 1, 1960 was placed for the completion of the entire reorganization. The plan will be discussed more completely in a future issue of TOPICS.

The policy relating to Specialized Forecasting has been the subject of review from time to time. Last summer Mr. Glen Jefferson, former Regional Administrative Director of Region 5, was invited to come out of retirement temporarily to take a consulting assignment to look into the problem, particularly with regard to the fire weather program in the West. Mr. Jefferson's report was reviewed by the staff on November 13, 1959. Mr. Jefferson's suggested program would require an additional annual expenditure of about $300,000. The decision as to whether we should budget for this item was deferred until the next budget is considered.

For several years the Bureau's attempts to go into cooperative projects with states and other nonfederal agencies have been deferred because of lack of specific authority to do so. This year, with support from the Department of Commerce and the Bureau of the Budget, we are asking Congress for legislation to accept funds from nonfederal agencies.

Upper air programs have been the subject of discussion several times during recent conferences. The need for a strengthened reporting network in the eastern Pacific has been stressed by Dr. Cressman, Director of the National Meteorological Center. He and Mr. Showalter, Chief of the Observations and Station Facilities Division, are to report back to the group as to the possibility of improving the moving vessel program as well as improving the instrumentation used in this program.

Mr. Cartwright, Coordinator of International Planning, reported that negotiations are proceeding between the United States and the Mexican Government in attempts to convert from the use of radiosondes to rawinsondes in Mexico. To aid in this program, the United States plans to offer the Mexican Government surplus reconditioned SCR-658 equipment.

The progress of the installation of the new aviation equipment purchased under "Establishment of Meteorological Facilities" funds was reviewed by Mr. Newton Lieurance, Associate Chief of Bureau (Aviation) in the conference on November 27, 1959. Mr. Lieurance stated that, while some items were behind schedule, the program was making satisfactory progress. Since the space here is limited, a more complete progress report will be given in a future issue of TOPICS.

TOPICS has been organizationally moved from the Executive Office of the Chief to the Office of Public Information. The role of TOPICS was discussed at a recent staff meeting. It is hoped that future issues will strengthen the role of TOPICS as a link between the Central Office and the field.

The Weather Bureau's use of

the leased aircraft for conducting meteorological research was discussed by National Hurricane Research Project's Business Manager, Art Youmans. The planes will be in the air long before the next hurricane season. Present dates for commissioning are about December 15 for the B-57 and January 15 for the two DC-6's.

Assistant Chief, R. C. Grubb reported that steady progress is being made on new accounting and budget procedures which will go into effect on July 1, 1960. The system is designed to give the Bureau's management better control over the fiscal program of the Bureau.

U. S. Participation in the Simultaneous Sessions of the ICAO Meteorology Division and the WMO Commission for Aeronautical Meteorology

THE Fifth Session of the Meteorology Division of ICAO met simultaneously with the Second Session of the Commission for Aeronautical Meteorology of the WMO in Montreal from September 1-28, 1959. Forty-six countries and international organizations took part, with some 75 delegates attending.

The U. S. Delegation comprised Messrs. G. D. Cartwright, A. H. Nagle, and P. H. Peridier of the Office of the Coordinator of International Planning, R. P. James (F&SR), and Silvio Simplicio (WBAS Idlewild), together with Mr. W. L. Halnon (CAB), Major H. T. Jacolick (AWS), Mr. R. H. Clinkscales (FAA), and Mr. G. Gatlin (ATA). Mr. Cartwright headed the Delegation. Mr. Nagle, President of the Commission for Aeronautical Meteorology, was elected Chairman of the Meteorology Division and presided over the simultaneous sessions; Mr. Halnon served as chairman of one of the three committees of the simultaneous sessions.

The subjects discussed during the sessions related in large part to the introduction of jet aircraft on many of the world's international air routes. They included the need for more precise temperature forecasts, both at the terminal and at high levels en route; the requirement for short period landing forecasts to be available to aircraft preparing to make their descent from flight altitude; the need for observations of runway visual range and the special problems relating to the placement of instruments for measuring this and other elements of significance in the landing phase; the type of upper air charts that might be used to provide information through the much deeper layer of the atmosphere involved in jet operations; and the operational significance of the tropopause and jet streams.

One of the characteristics of modern transport aircraft is their long range of operation. This imposes an ever widening area of responsibility on each major terminal and requires a greater collection of data and extension of the area of analysis. The concept of assigning responsibility for forecasting on an area basis was debated at considerable length during the meeting. According to this principle certain major international terminals would each assume responsibility for forecasting en route conditions over a specific area and the entire globe would be covered by these assigned areas. Exchange of forecasts in chart form between these terminals would then provide, with a minimum of effort and a maximum concentration of talent, the forecast material required for an international flight over any part of the globe. This system has already been adopted by the United States in the Weather Bureau's High Altitude Forecast Scheme for providing service to aircraft departing from U. S. airports. To establish the scheme internationally requires the solution of a number of difficult problems in regard to standardization of charts and types of forecasts, projection of scales and charts, symbols and nomenclature, etc. The Commission for Aeronautical Meteorology has set up a working group on area forecasting, to examine these problems and recommend solutions.

A considerable amount of discussion centered around the perennial problem of in-flight weather reports from aircraft. The achievement of the necessary balance between the requirements of the meteorologist and the limitations imposed by cockpit workload and air-ground communications proved to be one of the most difficult tasks before the meeting. In the end, however, a formula, based upon suggestions advanced by the United States, was developed, which can be regarded as an important step forward. It provides for routine in-flight weather reports to be made normally only when the aircraft opens up air-ground communication for the purpose of transmitting a full position report. Provision is made for regional air navigation agreement on additional routine observations to be made when necessary at intermediate points but these will be held until the next air-ground contact for ATC purposes. The circumstances in which aircraft are to be completely exempted from observing or reporting are spelled out and provision is made for reporting by selected aircraft only on routes of high traffic density. The problem is to be kept under continuous study by ICAO and WMO, with a view to further improvement and simplification of these worldwide procedures.

The need for improving the network of upper air stations over large areas of the globe figured prominently in the discussions of the meeting. The United States suggested the use of constant level balloons and the development of upper air observing from mobile ships as the most practicable means at present of meeting this requirement. This view was endorsed by the meeting.

Major revisions were made in the procedures for supplying aeronautical climatological data and the revised procedures will be promulgated by WMO in due course.

The need for the adoption of forecast verification systems, as a contribution toward improvement in the accuracy of forecasting, was also highlighted. The meeting endorsed, and recommended ICAO support for, the WMO plan to organize a series of symposia-seminars on high level forecasting, as a means of accelerating the provision of forecast service for jet operations.

The Commission for Aeronautical Meteorology held several separate meetings to deal with purely CAeM matters. In these separate meetings, the CAeM, in addition to setting up, under the chairmanship of Mr. Nagle, the working group on area forecasting already referred to, reestablished its working group on meteorological aircraft reconnaissance observing techniques and established another working group, upon which Mr. Simplicio is the U. S. expert, to draft a WMO guide on the utilization of meteorological reports from aircraft. The Commission approved, and recommended for publication by WMO, the guide on qualifications and training of aeronautical meteorological personnel drafted by Mr. Nagle and also recommended publication of Dr. J.K. Angell's paper on "The Application of Constant Level Balloon Data to Weather Analysis, Forecasting, and Research" as a WMO Technical Note. Mr. A.S. de Sousa (Portugal) was elected as the new President of CAeM and Mr. Nagle was elected Vice-President.

Electronic "Weather Detectives" to Improve Forecasting

By Norman R. Hagen

EACH year for the past few years the late Public Information Coordinator of the Bureau, Norman R. Hagen, was asked to guest-author an article on weather for the nationally syndicated columnist Robert S. Allen while Mr. Allen was on vacation.

The article that is reprinted below was delivered to Mr. Allen on August 14, 1959—one day before Mr. Hagen's sudden death.

Mr. Allen's column is syndicated by the Hall Syndicate, Inc., to over 200 newspapers across the country and is reprinted here with permission.)

An electronic weather detective soon will be added to the staff of 31 Weather Bureau offices to help find the hidden clues to better weather forecasts. Each of these 31 robot storm detectors will be able to locate and track all rain, hail and snow storms occurring anywhere within 250 miles of its sky scanning antenna.

The installation of this powerful weather watching instrument means that for the first time many local forecasters will be able to observe the minute-by-minute changes in size, intensity, direction and speed of a threatening storm as it moves anywhere over a 200,000 square mile area.

Called "Weather Search Radar" by the Weather Bureau, and identified as "WSR-57," these automatic and continuous recording storm detectives are already being tabbed by enthusiastic meteorologists as the "magic weather warning tool of the future."

Since June 1959, when the first of the 31 especially designed weather search radar sets was installed at Miami, there is growing evidence that the outstanding performance of the new model weather radar equipment will bring revolutionary changes in weather reporting and forecasting services.

Miami radar experts already have observed and tracked the fascinating generation-to-dissipation sequence that is characteristic of thousands of rain-shower clouds as they are carried along by the winds over southeastern Florida. The new radar's remarkable precision often makes it possible for a trained weather analyst to predict an hour in advance almost the precise minute when rain will begin falling on any specified street or beach area within a hundred miles of the Weather Bureau's office.

Within the next few months about a dozen of these powerful radar installations will have been completed. The order of equipment delivery from the factory for the first 12 new radar stations is as follows:

Miami, Fla.; Columbia, Missouri; Washington, D.C.; Apalachicola, Fla.; Kansas City, Mo.; New York, N.Y.; Brownsville, Texas; Des Moines, Iowa; Wilmington, N.C.; Daytona Beach, Fla.; Evansville, Ind.; and Charleston, S.C. Most of the remaining 19 installations are to be completed before June 1960.

The installation of a new weather tool with such unique capabilities does more than excite local weather forecasters -- it means immediate and extensive local benefits to the countless millions who need more precise forecasts of coming weather occurrences in planning their daily activities.

The 31 new weather search radars being installed incorporate hundreds of valuable technical advancements not found in the modified World War II airplane radar sets presently located at about 75 Weather Bureau stations east of the Rockies. For example, the new model radar sets can rotate both horizontally and vertically to reveal atmospheric cross sections extending out as far as 250 miles and up to heights beyond 60,000 feet. An attached movie camera can simultaneously film the precipitation patterns shown on the radar's screen for use in later storm research studies.

An image expander device, that can greatly enlarge the storm reflection patterns coming back from any selected area, permits exceptionally detailed examinations of unusual happenings in the atmosphere. This feature also makes it possible, for example, to look at the radar's screen located in New York City and tell exactly where in Philadelphia or in Providence citizens are being drenched by an afternoon shower.

Congratulations, Mr. Fidler!

ON October 17, 1959, the alumni association of Ball State College, Muncie, Indiana honored Mr. James C. Fidler with a distinguished service award. The inscription reads as follows:

"In recognition of notable contribution to mankind and loyal service to alma mater."

Mr. Fidler, who graduated in 1936, established the Ball State Weather Station. His pioneer work in weather broadcasts began at radio station WLBC, Muncie, Ind., and continued at a Cincinnati station. After World War II he went on to network program development where he earned the reputation of radio's original weatherman. He was the first weatherman on NBC-TV's "TODAY" program, as well as on many special programs during the development of color television. He introduced the use of radar as part of his presentation of weather on WLW-TV in Cincinnati, Ohio. When he returned to the Weather Bureau in 1958, he donated to Ball State College his meteorological library which included AMS publications dating from 1934.

We should like to add our congratulations to the honor bestowed upon him by his alma mater, Ball State College.

Users Say Delta Project Successful

THE Weather Bureau's pilot project in specialized agricultural weather service for the Delta area of Mississippi (See TOPICS, October 1958) has yielded savings to farmers in that area estimated in excess of two million dollars during its first year of operation, according to preliminary reports.

Bureau Research Agricultural Meteorologist John A. Riley, in gathering information for a formal report on the program's first year of operation ending September 30, quoted the savings estimate made by Mr. L. H. Mosely, District Agent for the Mississippi Extension Service.

Mosely's preliminary report substantiated earlier favorable reports from the Mississippi Farm Bureau Federation, the Delta Council, the National Cotton Council, and the State Commissioner of Agriculture.

The Delta project, a cooperative venture of the Weather Bureau, U. S. Department of Agriculture, and the Mississippi State Extension Service and Experiment Station, was authorized in 1958 by a Congressional appropriation of $48,000.

New features of the service that helped in making the payoff in increased farm income for Delta farmers are the following: more emphasis on research, better communications, agriculturally representative observations, specialized forecasts, better liaison between weather and agricultural research personnel, and finally, full utilization of the Extension Service worker.

Research on agriculture-weather relationships and their farm applications has resulted in the publication of several pamphlets that have been given wide dissemination in the cotton belt. Jointly authored by Jack Riley of the Bureau and agricultural workers, these pamphlets were published by the Experiment Station.

The success of the forecast program is due to the excellent interpretation of Weather Bureau forecasts by Mr. George V. Fish and the staff of the Weather Bureau Airport Station at Jackson, Mississippi and the Farm Weather Summaries jointly issued by Mr. Riley and the experiment station staff. These forecasts help the farmer to make more effective operational decisions. Mr. Gilley T. Stephens and the aviation forecast office in Memphis were able to do an effective job of forecasting for the crop duster pilots because of better observations and the improved forecast distribution facilities.

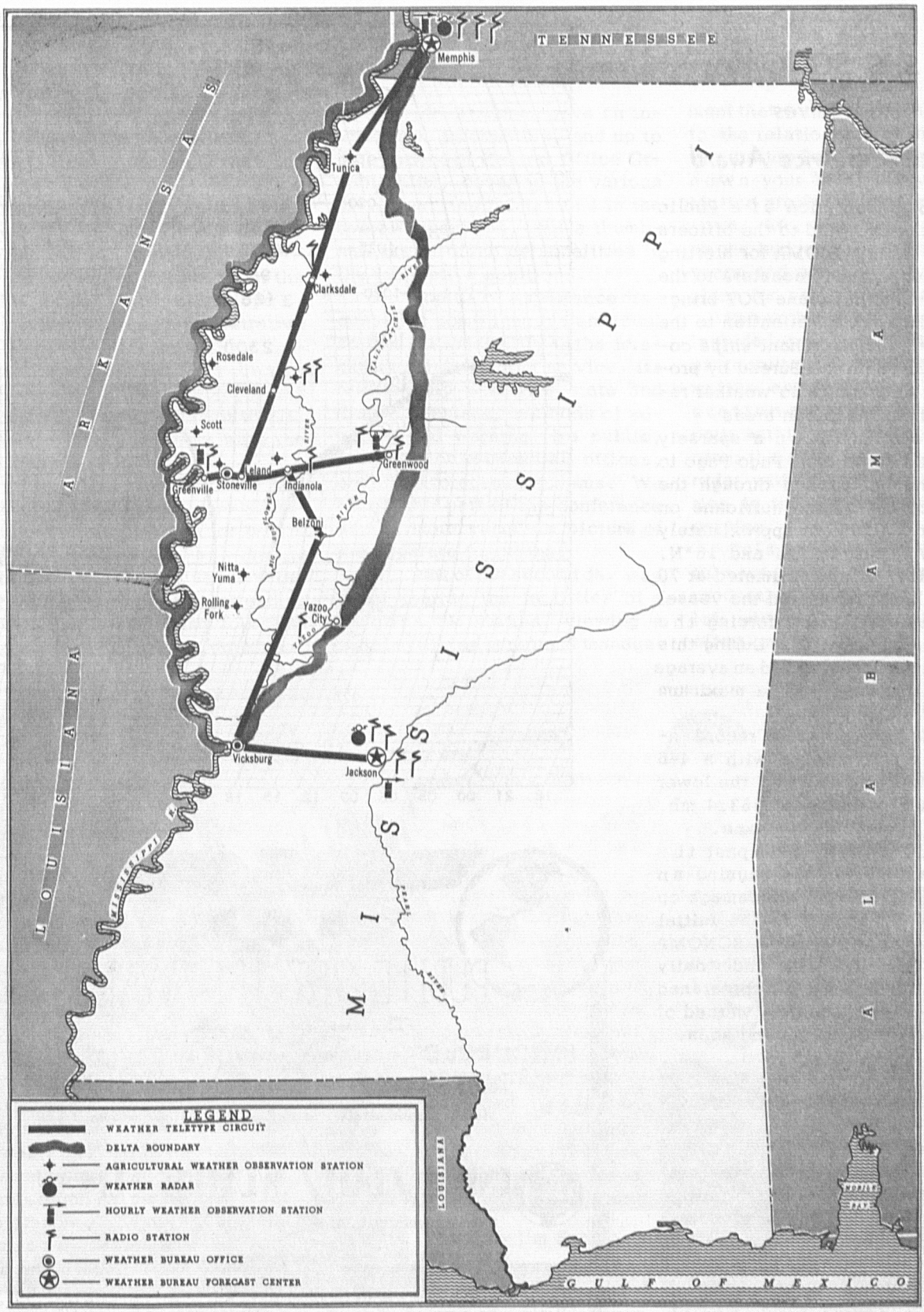
Radio, television, and the press do an excellent job of distributing the weather information to agriculture, business, and the general public. To help them, the Weather Bureau established in Mississippi's Delta Area a public and agricultural weather teletypewriter circuit operating 24 hours a day throughout the year. This circuit is equally available to all mass dissemination media in the Delta area.

The government pays the cost of extending the basic teletypewriter circuit, connecting Weather Bureau facilities in the area to every community with disseminating outlets and to Bureau offices at Jackson and Memphis. In turn, the outlets rent receiving machines from the communications company and pay local connection charges. Radio and television stations and the press are presently connected to the circuit in seven of nine such communities in the area. The service is also carried by outlets in Jackson and Memphis. The circuit is also connected to the office of one of the area's county extension agents.

The circuit brings timely weather information to all subscribers simultaneously. Included in this information are the three daily Delta Agricultural Weather Forecasts, the daily Delta Farm Weather Summary, agricultural aviation weather forecasts and summaries, agricultural interpretations of the 5-day forecasts and 30-day weather outlooks, weather map synopses several times daily, and daily agricultural weather reports from the network of 10 stations. Also included are frequent current weather reports from the regular weather reporting stations in and around the area, local and state weather forecasts for the surrounding area, national weather summaries, emergency warnings of severe weather, weather surveillance radar reports, river reports and forecasts, information releases, and other weather information of local, regional, and national scope.

The Delta Agricultural Weather Forecasts are designed to meet the requirements expressed by Delta agriculture. These requirements include definite and timely forecasts of: 1) wind direction and speed (for spraying and dusting), 2) dew amount and duration (for chemical defoliation), 3) areal coverage of precipitation in percent (for planning field operations), 4) estimated precipitation amounts (for planning supplemental irrigation and fertilizer application), 5) drying conditions, 6) cloud cover, and 7) temperatures.

Because agricultural weather forecasts can be a major factor in the farmers' operational planning, they must be sufficiently detailed for use in any part of the area and must be couched in simple, understandable terms. Forecasts cannot be 100 percent accurate; therefore, expression of the probability of occurrence of the predicted weather conditions is used whenever possible.


TENNESSEE
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Yazoo City
Vicksburg
Jackson
ARKANSAS
LOUISIANA
MISSISSIPPI
ALABAMA
Mississippi River
Tallahatchie River
Big Sunflower River
Yazoo River
Pearl River
Pascagoula River
Escatawpa River
Mobile Bay
GULF OF MEXICO
LEGEND
WEATHER TELETYPE CIRCUIT
DELTA BOUNDARY
AGRICULTURAL WEATHER OBSERVATION STATION
WEATHER RADAR
HOURLY WEATHER OBSERVATION STATION
RADIO STATION
WEATHER BUREAU OFFICE
WEATHER BUREAU FORECAST CENTER

S. S. SONOMA
Receives
Public Service Award

THE presentation of a Public Service Award to the officers of the S.S. SONOMA for alerting Weather Bureau forecasters to the presence of hurricane DOT brings well deserved attention to the nearly 2,000 merchant ships cooperating with the Bureau by providing mail and radio weather reports from the ocean areas.

The SONOMA on a sparsely traveled route from Pago Pago to Los Angeles passed through the very center of the hurricane on August 1, 1959 at approximately 142°W. longitude and 16°N. latitude. Winds estimated at 70 to 90 knots pummeled the vessel for several hours forcing the Master to heave to. During this period the vessel rolled an average of 30 degrees, with a maximum roll of 37 degrees.

The rare pressure record indicates two minima with a 4-6 mb. rise preceding the lower minimum pressure of 963.4 mb. in the eye of the hurricane.

DOT churned on past the Hawaiian Islands causing an estimated $6,000,000 damage on Kauai, but thanks to the initial observations from the SONOMA the storm was kept under daily surveillance and all threatened areas were adequately warned of the dangerous winds and seas.

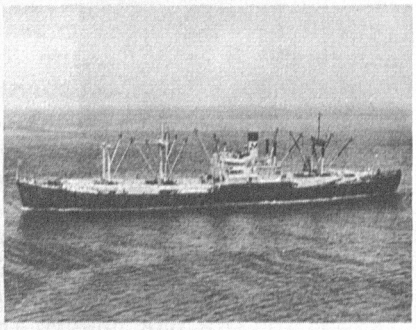
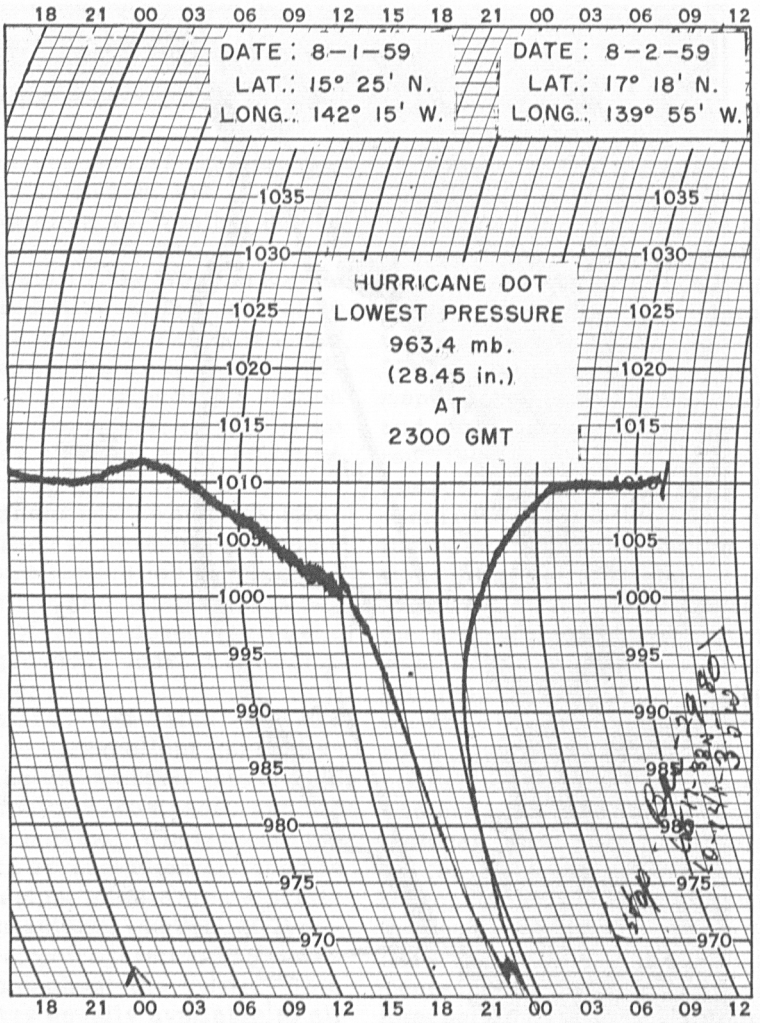


Photo by Matson Lines



PUBLIC SERVICE AWARD

This certificate is awarded to

SS SONOMA
Matson Navigation Company

Captain Frank Hicker, Master
Lloyd Waller, First Mate
Marion Gove, Second Mate
James Tucker, Third Mate
Howard Vaughn, Jr., Third Mate
Arthur Larsón, Radio Officer

in official recognition and appreciation for contributing to the public safety and welfare by service performed for the

UNITED STATES WEATHER BUREAU

Dated at Washington, D.C. on October 7, 1959

F.W. Richardson
Chief, United States Weather Bureau

CIRCUMSTANCES : On a voyage from Pago Pago to Los Angeles July 31, 1959, the SS SONOMA encountered a dangerous hurricane. Prompt weather observations alerted U.S. Weather Bureau forecasters to the storm's position, permitting advance warning to shipping and land areas affected by hurricane "DOT". Damage and loss of life would have been much greater without these warnings. Officers of the SS SONOMA are commended for their valuable contribution to the safety of life and property.

Report on North Carolina MIC's Meeting

By Sam F. D. Duke

THE MIC's of North Carolina and the Regional Administrative Officer of Region I were the guests of Mr. Charles B. Carney and staff at Raleigh-Durham for a two day meeting on October 13-14, 1959.

All seven of the MIC's in the state attended. Mr. Lloyd E. Brotzman, Regional Administrative Officer New York, moderator, allowed enough flexibility in the program to discuss subjects and problems of most concern to all. Among the many subjects were the following:

1. Areport was made by Mr. Carney on the Preliminary Supervisory Training Course for MIC's. Of particular interest were his notes on a talk given by Dr. Reichelderfer to those attending the preliminary training course in the Central Office in September.

2. Mr. Brotzman gave an interesting, informative, and up to date outline of Central Office Organization, covering the various divisions, their functions in the overall operation, and a thumbnail sketch of the personalities in the respective positions.

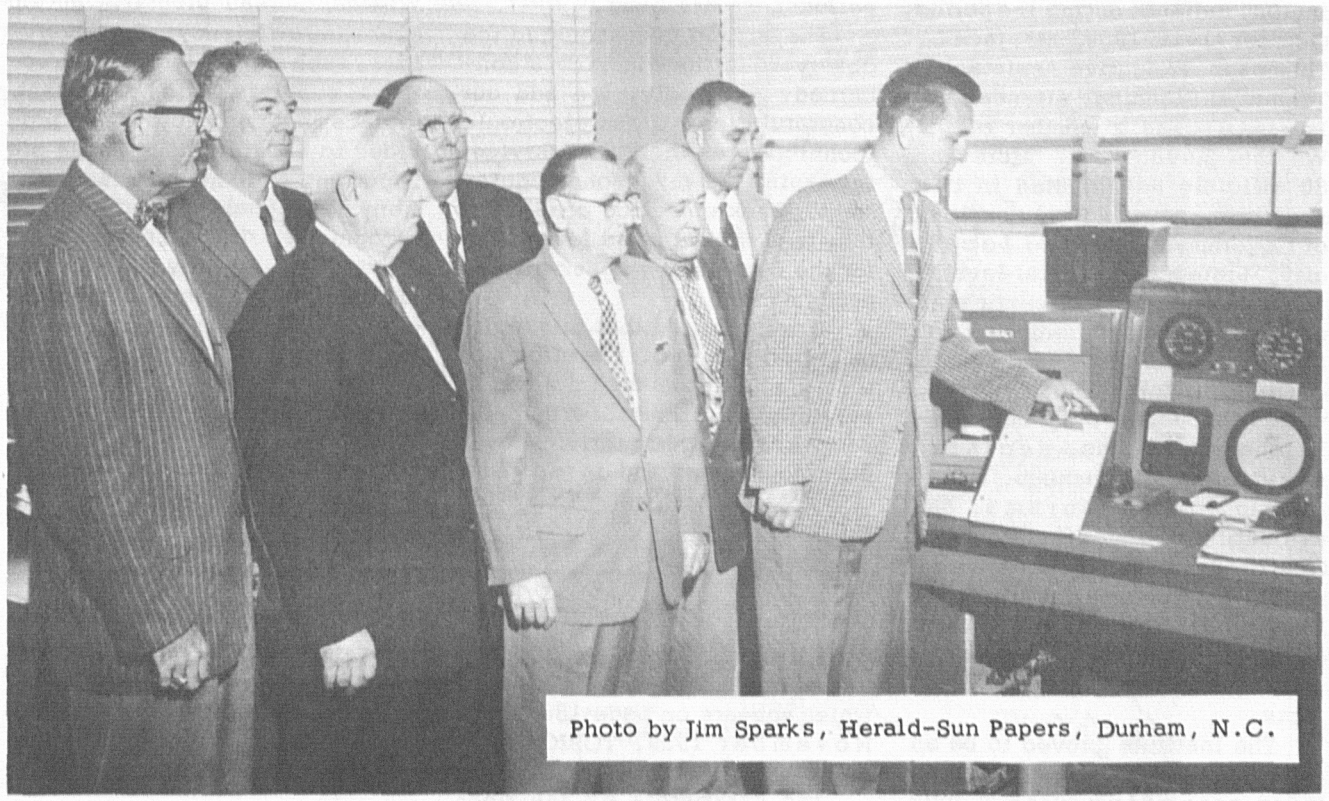
3. Topics of importance discussed at some length were local station responsibility in the forecasting and warning service, its relationship with the state and district centers, methods of advising and warning the public, coordination between all offices, and local forecast problems. We all left this part of the conference with a more complete picture of the separate functions.

4. Part of the second day was spent touring the facilities of a modern TV station, viewing a training film on personnel management that was directly applicable to the relationship of the MIC to the station personnel, and a "let down your hair" discussion of station problems and programs.

5. Mr. Brotzman commented on the budget outlook for several years and touched on long range plans for programs in the Bureau.

Some other subjects discussed included: personnel policies such as recruitment, evaluation, promotion, and separation; review of station activities by officials, both within and outside the Bureau; the electronic program; and radar with its practical application to the forecast and warning service.

To summarize for the MIC's, this was a most informative and productive conference. We all left with a keener sense of team effort among ourselves and a



Left to right—Ben H. Williams, Paul J. Bowers, James P. Molen, Wiley K. Sims, Lloyd E. Brotzman, Frank C. Hood, Sam F. D. Duke, and Charles B. Carney

strong feeling that the Central Office and Regional Office were aware of our many problems. It was the opinion of the MIC's that similar meetings should be held throughout the country so all the Bureau might benefit. Our senior member, Mr. Molen, who wore a 40 year service pin in his lapel, summed it up very well when he said, "Before coming I did not know why I was coming, but having been here I don't see how I have gotten along all these years without such conferences."

placed on developing management perspective, improving problem-solving ability, and broadening understanding of program development as a basic component of efficient management.

An interesting development brought out during the Institute is the use of electronic computers as an increasingly important tool of management, not only for accounting and other housekeeping functions, but also as an aid in the making of complex management decisions. This is requiring that administrative techniques and decision processes become more and more objective, and there is an evident need for increased precision in defining terms, measuring quantities, and prescribing objectives in management problems. In this sense, the administrator and the physical scientist should be brought closer together -- perhaps close enough so that each will understand the other's language.

Institute for Program Formulation and Development

CONDUCTED by the American Society for Public Administration, an Institute for Program Formulation and Development was held at Indiana University, Bloomington, Indiana, during the period October 11-16, 1959. Mr. Jack C. Thompson, Executive Assistant for Technical Planning, attended the Institute as a member of the Weather Bureau staff. More than 80 officials participated in the sessions, covering all echelons of Government including local, city, state, and federal levels.

Institute participants were given preliminary orientation and instructional materials in advance of the meeting. These covered various aspects of program formulation and planning, decision making, program changes, building support for programs, and evaluating program effectiveness. Qualified academic and governmental leaders then provided lectures on these topics, and small group workshops examined case studies on these and related subjects.

The Institute proved to be an excellent means for providing those attending with a top-management, organization-wide point of view. Emphasis was

Is Our Face Red!!!

A new quarterly feature, "High Performance Rawinsonde Stations," was inaugurated in TOPICS for September 1959. Our attention has been called to the fact that no mention was made of the important contribution of the electronic technicians to the outstanding performance achieved.

The article congratulated the observers of the stations concerned. Belatedly, we add our congratulations to the electronic technicians for their vital services in keeping the rawinsonde equipment in peak operating condition, thus furnishing a solid foundation for the outstanding observational performance.

It is regretted that this major omission occurred. The efforts of many electronic technicians in servicing equipment, with call-back after hours, driving over hazardous roads and in severe weather conditions to restore vitally needed equipment to A-1 operating condition, are known to the Central Office. We are glad of this opportunity to set the record straight.

The contribution of many individuals is required to keep Weather Bureau programs at top operating efficiency. Basic services, such as furnishing instructions, supplies, office equipment, replacement parts, etc., are provided to all stations. These are important and the efforts of the many individuals involved are recognized. The services are provided in the same fashion for all stations, however, and the outstanding performance shown for the cited rawinsonde stations are largely the result of the efforts of local personnel (including the ELTEC !).

CORRECTION

THE formula for relating known winds to various heights which appears on page 188 of the November 1959, TOPICS is in error.

The parameters on the right hand side of the equation should be enclosed in parentheses to indicate that the ratio is raised to the 1/7 power and this quantity is then divided by the denominator. The formula should appear:

$$\frac{V_h}{V_{h_o}} = \left(\frac{h}{h_o}\right)^{1/7}$$

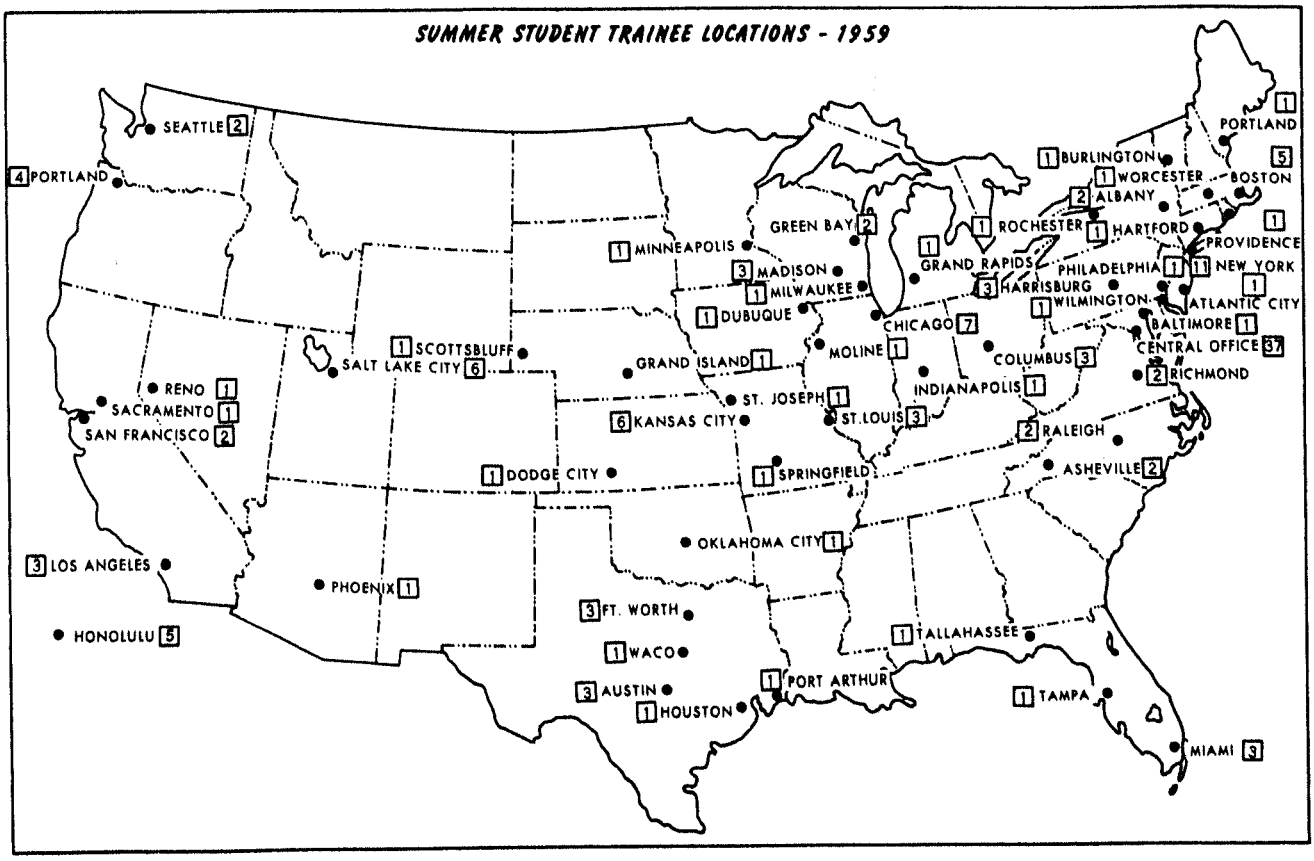
Summer Student Trainee Program Expands

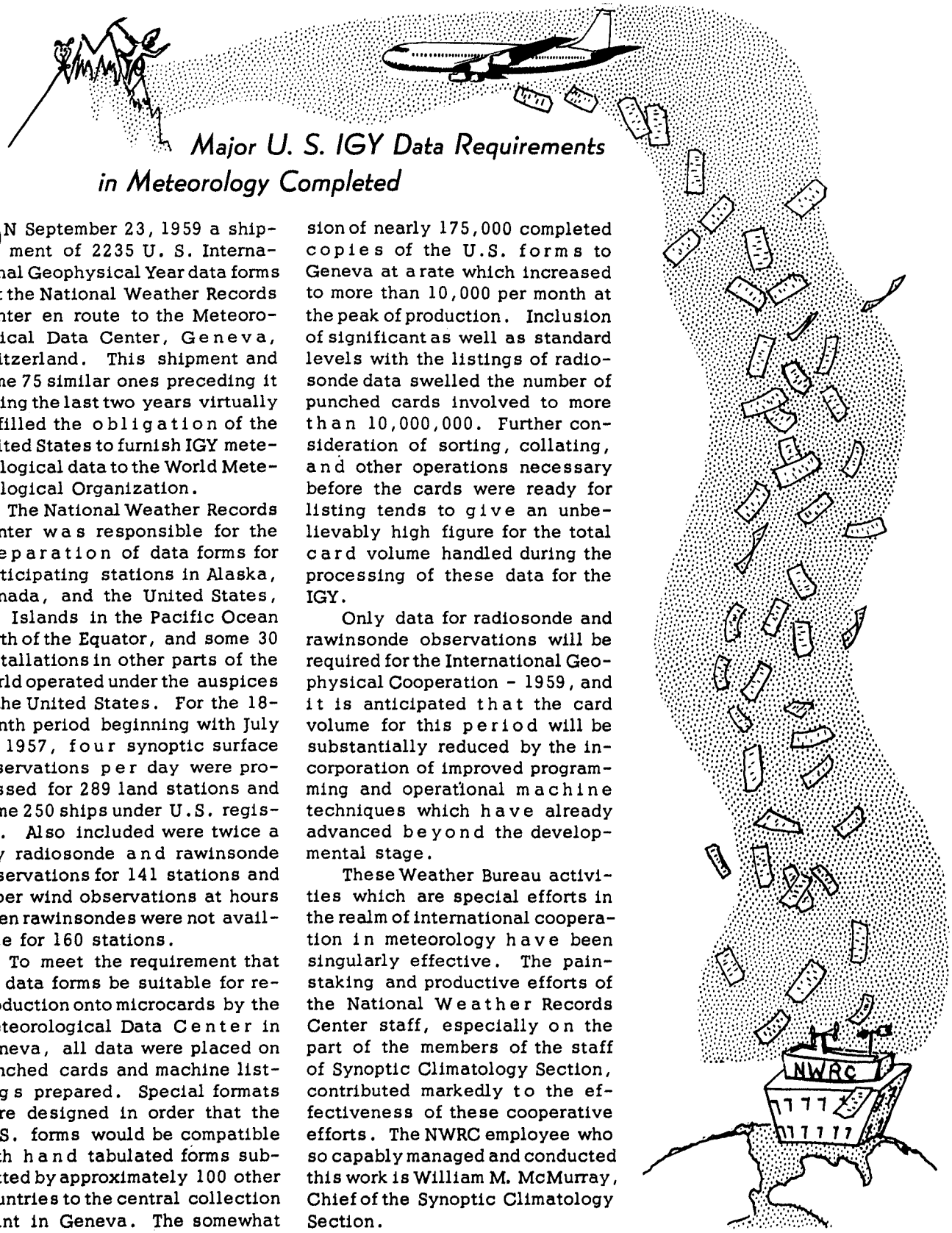
FOUR years ago the Bureau entered into a program of interesting young people in meteorology by giving them a look into what a future career in weather would hold for them, a working sample of what they could look forward to on graduation. Under the auspices of the Civil Service Commission's Student Trainee Program, selected high school and college students, majoring in the physical sciences, are given trainee positions during the summer vacation months. Each station devises a "tailor-made" program, approximately 50 percent of which is a study program for each trainee.

Originally the program was geared to meteorology majors, but has been expanded during the past two years also to put emphasis on science majors in other fields who have meteorological interests, or "A Weather Eye to the Future." The popularity and success of the program is apparent in the sixfold expansion which has taken place during the past four years. During the past summer, 149 students from all parts of the country (See Map) delved into the mysteries of meteorological phenomena, aided in taking observations, and otherwise assisted the "Weather Man" at 33 different locations.

As mentioned before, the first two years of the program emphasized the selection of students majoring, or planning major study, in meteorology. During the last two summers and particularly the one just passed, students in other scientific fields showing an interest in meteorology have been included in the program. Many have found an incentive for their science curriculum after a first hand view of its practical application and some already are planning in terms of graduate study in meteorology.

About half of each year's trainees have elected to remain with the Bureau. Upon returning to school these students become "Recruiters," and the success of the program is dependent upon their reaction to the welcome and training they receive during their summer work. Just as important too is the follow-up attention they receive after returning to school, showing that we have an interest in their future. The enthusiastic response of last summer's group is indicative of their acceptance of what the Bureau has to offer, and we believe that the Student Trainee Program has been successfully launched and will develop into an effective recruiting tool in meeting the Bureau's professional demands of the future.





Major U. S. IGY Data Requirements in Meteorology Completed

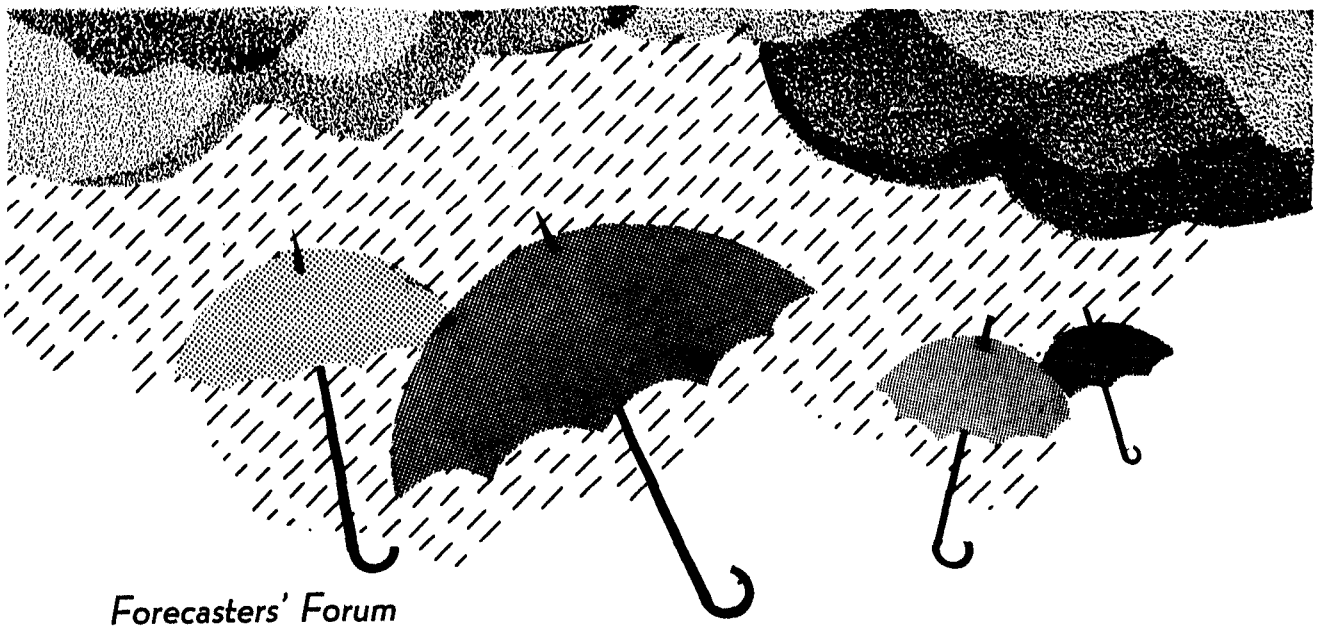
ON September 23, 1959 a shipment of 2235 U. S. International Geophysical Year data forms left the National Weather Records Center en route to the Meteorological Data Center, Geneva, Switzerland. This shipment and some 75 similar ones preceding it during the last two years virtually fulfilled the obligation of the United States to furnish IGY meteorological data to the World Meteorological Organization.

The National Weather Records Center was responsible for the preparation of data forms for participating stations in Alaska, Canada, and the United States, the Islands in the Pacific Ocean north of the Equator, and some 30 installations in other parts of the world operated under the auspices of the United States. For the 18-month period beginning with July 1, 1957, four synoptic surface observations per day were processed for 289 land stations and some 250 ships under U.S. registry. Also included were twice a day radiosonde and rawinsonde observations for 141 stations and upper wind observations at hours when rawinsondes were not available for 160 stations.

To meet the requirement that all data forms be suitable for reproduction onto microcards by the Meteorological Data Center in Geneva, all data were placed on punched cards and machine listings prepared. Special formats were designed in order that the U.S. forms would be compatible with hand tabulated forms submitted by approximately 100 other countries to the central collection point in Geneva. The somewhat staggering result was the submission of nearly 175,000 completed copies of the U.S. forms to Geneva at a rate which increased to more than 10,000 per month at the peak of production. Inclusion of significant as well as standard levels with the listings of radiosonde data swelled the number of punched cards involved to more than 10,000,000. Further consideration of sorting, collating, and other operations necessary before the cards were ready for listing tends to give an unbelievably high figure for the total card volume handled during the processing of these data for the IGY.

Only data for radiosonde and rawinsonde observations will be required for the International Geophysical Cooperation - 1959, and it is anticipated that the card volume for this period will be substantially reduced by the incorporation of improved programming and operational machine techniques which have already advanced beyond the developmental stage.

These Weather Bureau activities which are special efforts in the realm of international cooperation in meteorology have been singularly effective. The painstaking and productive efforts of the National Weather Records Center staff, especially on the part of the members of the staff of Synoptic Climatology Section, contributed markedly to the effectiveness of these cooperative efforts. The NWRC employee who so capably managed and conducted this work is William M. McMurray, Chief of the Synoptic Climatology Section.



Forecasters' Forum

Occasional Scattered Rain Showers?!

A recent editorial in one of the large eastern papers said in part "If ... their suburban neighbors ever lose faith in their Weather Bureau Man, it may be because of his too frequent prediction of 'scattered showers.'"

The dilemma of the forecaster when showers seem to be surrounding him is one not easily resolved. In areas of our southern states scattered showers are almost a daily summertime feature of the weather. Does "scattered showers" in the forecast add anything to what the public already knows from experience? Do the qualifying terms "risk of," "widely scattered," or "general showers" give the user a better understanding of our forecast? If not, would a mathematical probability reach a larger number and improve our public relations? Would a statement such as "one chance out of three" be better understood?

Is the frequent use of scattered showers in the forecast in any way a result of the "Thunderstorm Encirclement Illusion?" For an exposé of the "Thunderstorm Encirclement Illusion" we suggest an interesting article in the August 1959 Weatherwise entitled "It Rained Everywhere But Here," by James E. McDonald.

Another of our frequently used and troublesome terms is "occasional rain." This is defined in the WB Manual III-B-5607 as "occurring now and then; occurring at irregular intervals; the periods of precipitation are relatively short and occupy only a short part of the total time." A comment adds, "The meaning is similar to 'intermittent' but implies a smaller frequency."

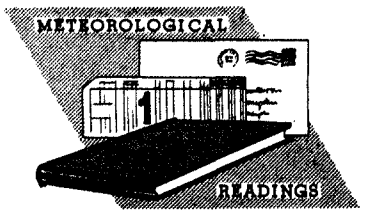
However, this may be the wrong meaning to assign to the expression. In discussions with the layman we gather that the "occasional rain" forecast means something much different to the public. It is the signal to carry raincoat and umbrella and to prepare for an abundance of rainfall.

One gets the feeling that this term is too frequently used when we can't quite make up our minds as to what the forecast should be. When should this term be used? Is it likely to occur in northwesterly or north northwesterly flow to the east of a migratory ridge aloft, as was recently forecast, or should it be reserved for a period when a southerly component to winds aloft is forecast? Should it be a forecast that requires an associated cyclonic system or is it likely to occur in isolated areas where no well-defined low exists?

A brief period of sprinkles or light rain frequently occurs well in advance of an approaching storm and its associated precipitation area. Are weak "bursts" of precipitation of this type which "outrun" the major system properly designated as "occasional rain"? We ask these questions because they are eternally forced upon us by the "busted" forecast or by someone who thinks we have "busted" the forecast.

Each forecaster is invited to carefully review this problem as it affects his forecasts. Group discussions should help produce better and more uniformly applied practices in dealing with these problems of expression. The Central Office would be interested in a review of any such discussions, and the ideas of all forecasters are solicited.

E. M. Vernon, Chief,
Forecasts and Synoptic Reports Division



Introduction: Meteorological Readings is an organized program of reading assignments for all Weather Bureau personnel who wish to participate. For more introductory information, see TOPICS May 1957.

Assignment No. XXXII: Anticyclones, H. Wexler, on pages 621-629 of the Compendium of Meteorology.

About the Assignment: This article discusses the genesis and transformation of highs or anticyclones. An important feature is the differentiation between warm and cold highs.

Col. 61 What is a possible cause of the high pressure in a warm anticyclone?

1. Cold dense air in the troposphere.
2. Alternating cold and warm air layers in the troposphere.
3. Colder, denser air in the upper troposphere and lower stratosphere.
4. A thick layer of cold air near (but not on) the surface.

Col. 62 From what direction does the back door cold front approach Washington, D.C.?

1. Northerly
2. South
3. Southeast
4. West

Col. 63 What is the extent of knowledge of the causes of genesis and development of deep anticyclones?

1. Complete
2. Non-existent
3. Incomplete
4. Satisfactory

Col. 64 What condition near or above a surface high best delineates it as a warm anticyclone?

1. High surface pressure
2. Cold surface temperatures
3. Counterclockwise circulation above a shallow ground layer
4. Clockwise circulation to a depth of several miles

Col. 65 How does the central pressure compare with peripheral pressures and what is the direction of rotation of an anticyclonic eddy in the Northern Hemisphere?

1. Higher-counterclockwise
2. Lower-clockwise
3. Higher-clockwise
4. Lower - counterclockwise

Col. 66 What primarily causes the formation of polar anticyclones?

1. Clockwise tropospheric eddy
2. Divergence and sinking
3. Cooling of the surface layer of air
4. Departure of existing low

Suggestion Award Winners

Milton O. Swenson	RAO, Salt Lake City
Joseph J. Conte	St. Louis
Clynt E. Sitchler	Abilene
Hubert M. Hynes	Boston
Ernest C. Bice	Brownsville
Carroll A. Elford	Chicago
Jane L. Brown	RAO, Kansas City
Ruth R. Zastrow	RAO, Salt Lake City
Mary A. Norris	Central Office
Melvin Stricker	Hartford
Richard N. Cook	Huron
Dwight F. Small	AWP, Boston
William H. Wells	Huron
Lawrence O. Oliver	Great Falls
Shannon A. Teal	Abilene
William W. Glenn	WRPC, Chattanooga
Florice P. Williams	Central Office
James R. Miller	Saigon
John T. Murray	Williamsport
Harry B. Hansen	Pomona
Patrick T. Dugan, Jr.	Pittsburgh
Bernarr Max Woitschek	Honolulu
Leonard W. Morris	Central Office
Quentin C. Snyder	Pittsburgh
Theron E. Sallee	Wichita
Warren W. Buck, Jr.	Central Office
Loren Shipp	Alamosa
Davis A. Horner	Columbia, Mo.
Clyde B. Lee	Louisville
Gladys C. Searles	Phoenix
William E. MacGregor	Roanoke
Harold E. Lami	Mobile
Albert J. Rohlfs	Honolulu
Robert J. Mullin	AWP, Boston
Holly B. Trimm	AWP, Boston
George W. Geisler	Honolulu
W. Howard Ulsh	Wilmington, N. C.
Richard C. Lyle	RAO, Kansas City
Quentin C. Snyder	Pittsburgh
William H. Metivier, Jr.	NAWAC
Dwight A. Rigney	RAO, New York

Col. 67 What type of lapse rate is commonly observed in the lowest layers in newly formed polar anticylcones?

1. Adiabatic
2. Super adiabatic
3. Isothermal
4. Inversion

Col. 68 What effect does a strong belt of westerlies located south of a source region have on the southward migration of polar anticyclones?

1. No effect
2. Causes southward movement
3. Causes southeastward movement
4. Blocks southerly motion

Col. 69 What was the meteorological background of the disastrous Donora smog?

1. Turbulent air
2. Impervious inversion
3. Steep daytime lapse rates
4. Weak inversions

Col. 70 Which is most directly connected with barometric pressure?

1. Momentum
2. Acceleration
3. Mass
4. Vorticity

Notice of Published Articles for Inclusion in Official Personnel Folder

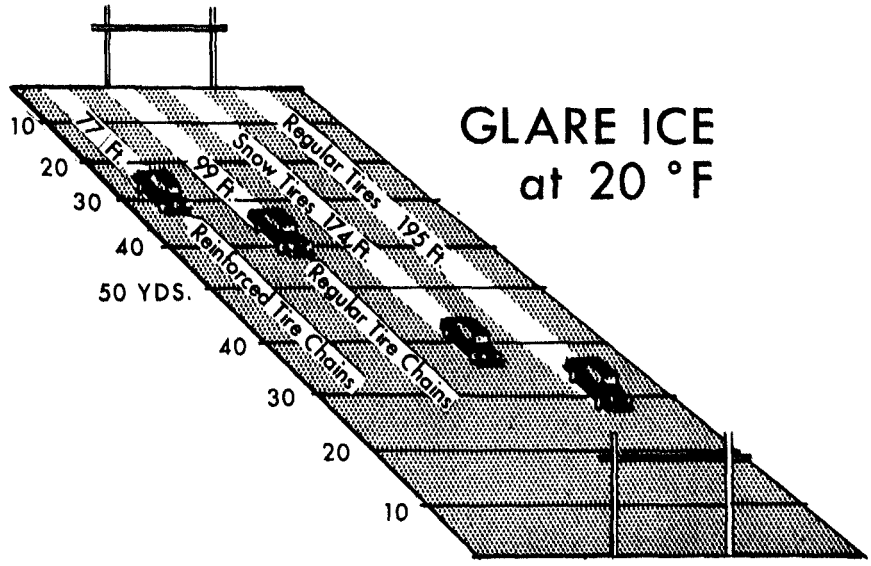
FROM time to time, Personnel Management Division has received copies of articles which have been published in various meteorological journals, crop bulletins, etc., with a request that the article be placed in the author's official personnel folder.

For the purposes of personnel records and evaluation, the actual article itself is not required; a notation of the fact that the article has been accepted and published will suffice. Since these articles are often several pages long, some of the folders are becoming quite bulky.

It is requested that, in the future, employees who wish this information placed in their official personnel folder submit a listing of the article(s) on WB Form 5010, in accordance with WB Manual Chapter I-H-1611.

Skid Facts for Scatbacks

WINTER roads are no fun to tackle if you're a motorist. Covered with ice or snow, they can throw you for a big loss. Stopping distances at 20 m.p.h. are shown by the National Safety Council on a football gridiron to help skid-iron scatbacks visualize the l-o-n-g stops on slippery grade - 3 to 12 times longer than on dry pavement. Caution is the best defense against winter weather - in starting as well as stopping.



Helpful Hint

THE Charleston, South Carolina, rawinsonde station, which is bothered with dust and sand getting on the balloon inflation table, reports:

"...deposits of dust and sand are on the inflation surfaces and sweeping or dusting is not effective to give clean surface required for laying out the warm neoprene balloons at the beginning of the inflation. At this station we have a large (improvised) table for inflation. We provide roll wrapping paper and use a new sheet at each observation. The wrapping paper now in use is 8135-160-7752 (cost $4.80) and one roll lasts more than six months."

If any other station is experiencing similar difficulty, the solution suggested by Charleston might be tried.

Unused Sick Leave

THIS list is made up of names submitted directly from each station or office. If there are employees at your station who have accumulated more than 1,000 hours of sick leave and whose names have not been published please let us know.

Asheville, N.C. NWRC
- Richard M. Jackson
- Sidney Overton
- John V. Vaiksnoras

Buffalo, N.Y. WBAS
- Fred R. Mueller

Central Office
- Calvin W. Cochrane
- Charles S. Gilman
- John C. Hagan
- William E. Hiatt
- Grover D. Hughes
- Arthur W. Johnson
- Max A. Kohler
- Wallace W. Lamoreux
- Ralph F. Kresge
- William Malkin
- Sydney Molansky
- Tor J. Nordenson
- Joseph L. H. Paulhus
- Otto J. Preikszas
- Alexander L. Shands
- Bennett Swenson
- Richard D. Tarble

Chattanooga, Tenn. WBAS
- Sam A. DeLay
- Berl L. Henry
- Hugh E. Pritchard, Jr.
- Delbert W. Robertson
- M. Harold Smith

Oklahoma City, Okla. WBAS
- William C. Ezzell
- John W. Hamilton
- John E. Harrison
- Obie O. Lane
- Hugo V. Lehrer
- Jeter A. Pruett
- Delbert P. Samsel
- Laverne L. Sandy
- James O. Savage
- Neil B. Ward

Portland, Maine WBAS
- Chesney E. Twombly

Providence, R. I. WBAS
- Harry J. Pause

Rochester, N. Y. WBAS
- Willard A. Brownlee
- Walter C. Sutton
- John M. Williams

Roseburg, Oregon WBAS
- E. M. Fretwell
- L. J. C. Hedine
- C. F. Penfield

Salem, Oregon WBAS
- Robert W. Beal
- Francis J. Burns
- George L. Rudolph

San Antonio, Texas WBAS
- Rodrigo V. Gonzales
- Carl W. Hostetter, Jr.
- George M. Kush
- Harold S. McCrabb
- Isom E. Medford
- Henry G. Resendez
- Ethan A. Scott
- Alfred C. Slattery

San Francisco, Calif. WRPC
- H. C. Steffan

San Juan, P. R.
- Albert O. Bangert
- Harry M. Hoose

Silver Hill, Md.
- August F. Mayer

Spokane, Wash. WBAS
- Alva J. Jones

Wake Island WBAS
- Lewis Hayes

Yuma, Arizona WBAS
- Ray Guenzi

Superior Accomplishment Awards

Rachel Babb	Meteorological Aid	Asheville
Edith Davis	Fiscal Officer	RAO Anchorage
Richard Foster	P&S Supervisor	RAO Anchorage
Richard Glommen	Meteorological Aid	Anchorage
Kenneth Hagy	Meteorologist	Philadelphia
Marvin Kelly	OIC	Barter Island
Robert McBride	Meteorological Aid	Chattanooga
John Riley	Meteorologist	Stoneville
Joseph Strachila	Meteorologist	Seattle
Irwin Teske	Meteorological Technician	Albuquerque

NEW MIC'S

WBAS Milford, Utah

GEORGE C. DENMAN of WBRS Las Vegas, Nevada, has been selected to replace Frank C. Gift as Meteorologist in Charge at WBAS Milford, Utah.

Mr. Denman began his career with the Bureau as Junior Observer at Tucson, Arizona in November 1931. Subsequent assignments have been at Des Moines, Iowa; Cheyenne, Wyoming; Brownsville, Houston, El Paso, and Fort Worth, Texas; Juneau and Bethel, Alaska; Texarkana, Arkansas; AWP, New York; Red Bluff and WRPC, San Francisco, California, and NWRC, Asheville, North Carolina.

Marquette, Michigan

FRED R. MUELLER, now a Forecaster at WBAS Buffalo, New York, has been selected for transfer to Marquette as MIC. He is 45, began his service in the Bureau on June 1, 1942, and his assignments have been at WNA, Toledo, and Buffalo.

North Platte, Nebraska

GUY H. GRAY, Jr., of the Oklahoma City WBAS has been selected for transfer to North

Platte as MIC. He is 34, has been in the Weather Bureau since June 1949, and his assignments have been at Big Spring, Brownsville, Fort Worth, Central Office (Hydrologic Services Division), and Oklahoma City.

RETIREMENTS

Glover L. Blinde

GLOVER L. BLINDE, Meteorological Aid at Denver, retired on disability November 30 after more than 21 years of government service.

Mr. Blinde was born in Johnson, Nebraska, but moved to Denver with his family at an early age. He entered the Weather Bureau as a Junior Observer at Denver in 1937, where he served until February 1940 when he accepted transfer with promotion to Shreveport. Mr. Blinde was granted LWOP in the fall of 1940 to attend the University of Colorado. His college education was interrupted for military service during World War II. After two years as an Air Force Weather Officer he returned to duty at Denver. In 1945 Mr. Blinde was again granted LWOP to resume his studies at the University of Colorado, where for the next two years he worked toward his degree in engineering. Returning to Denver in 1947 he served at the Weather Bureau Airport Station until illness necessitated his retirement.

Mr. Blindes' mailing address is 406 West Jewell Street, Denver 23, Colorado.

Jose A. Rivera

ON December 8, 1917, Jose A. Rivera reported for duty as a messenger at the Weather Bureau office in his home town of Sante Fe, New Mexico. On November 30 retirement from his position as Rawinsonde Specialist at El Paso terminated a career of almost 42 years of loyal and competent service.

Mr. Rivera served as messenger and observer at Sante Fe until his transfer to El Paso in 1941. His service with the Bureau has been continuous with the exception of a four-month period in 1917. Mr. Rivera has served the Weather Bureau faithfully and well during his long career.

Mr. and Mrs. Rivera will continue to make their home in El Paso, where friends may contact them at 4111 Chester Street.

Rex B. Shaw

REX B. SHAW, Meteorological Technician, Wilmington, Delaware retired October 31, 1959.

Mr. Shaw was born in Albia, Iowa, graduated from Lake Charles, Louisiana, High School, and received his B.A. degree in Civil Engineering at the University of Texas. He entered the armed forces following graduation from college and rose to the rank of Field Artillery Captain during a military career which terminated with his retirement in 1933. Following retirement he became a Cruise Director for the Swedish American Steamship Lines, serving in this capacity until World War II. Just prior to entering the Weather Bureau Mr. Shaw was a Sports Writer for the Easton, Maryland, Journal. He joined the Weather Bureau at Baltimore in June 1948, transferring to Wilmington just a few months later.

Mr. Shaw's plans are still indefinite but for the present he may be contacted at 3908 Sussex Road in Wilmington.

Howard B. Cowdrick

HOWARD B. COWDRICK, Meteorologist in Charge at Marquette when he retired April 30, 1947, died in Napoleon, Ohio, November 22 at the age of 74.

Mr. Cowdrick entered the Weather Bureau on September 16, 1907, at Tampa. He also served at Houghton, Michigan, prior to transferring to Marquette in July 1933.

Walter E. Duquette

WALTER E. DUQUETTE, Instrument Maker in the Central Office, died suddenly November 18.

Mr. Duquette was born December 1, 1902, in West Charleston, Vermont. He was employed as a machinist in private industry for many years before entering the government service at the Naval Torpedo Station in Alexandria, Virginia, on February 16, 1942. He transferred to the Naval Research Laboratory in Washington on January 3, 1946, where he worked as a machinist until April 1955 when he joined the Weather Bureau as an Instrument Maker.

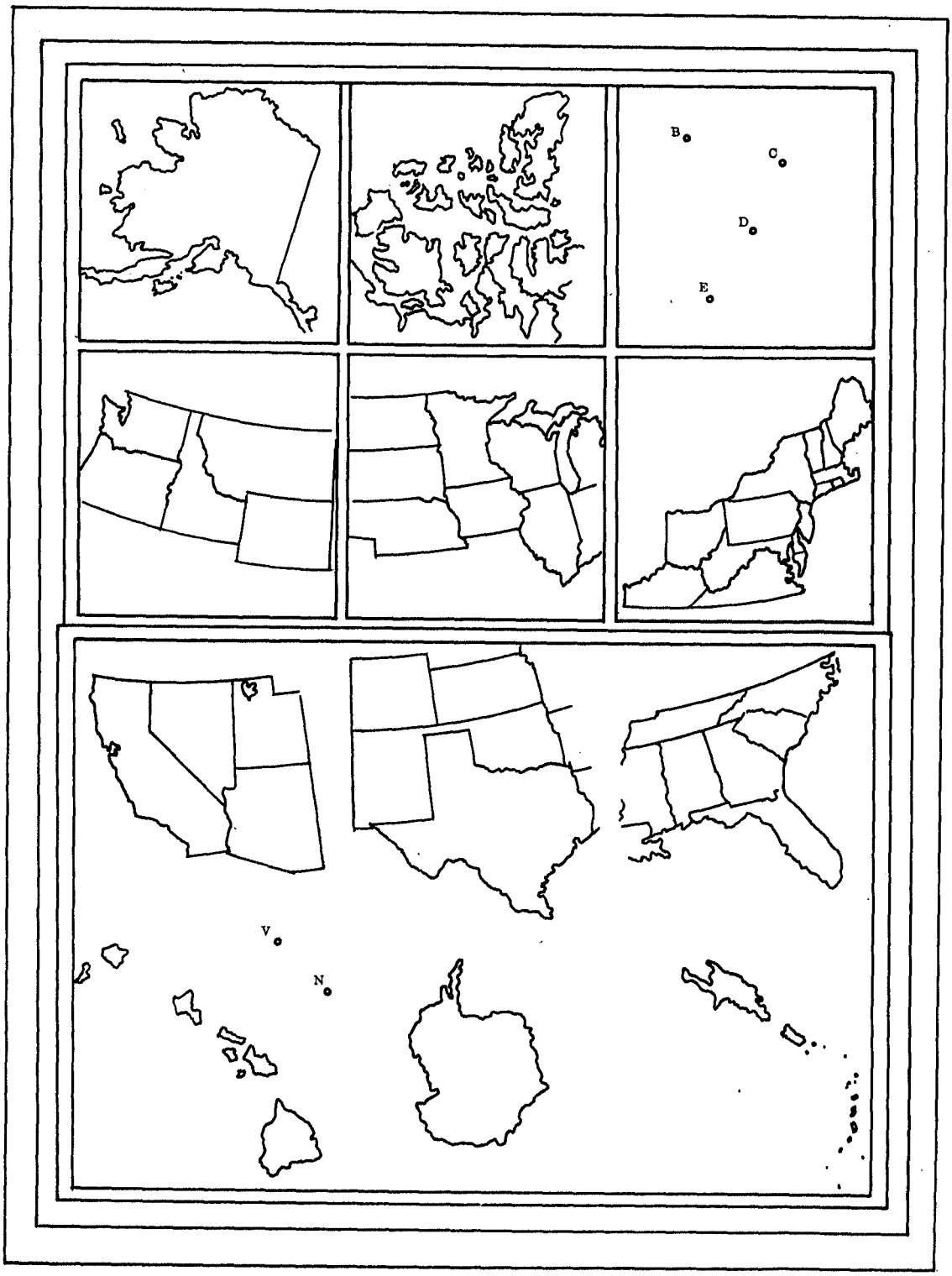
Mr. Duquette is survived by his wife, who lives at 1308 South 28th Street in Arlington, Virginia, a daughter, and one grandchild.

Joseph M. Kirk

JOSEPH M. KIRK, Official in Charge at New Haven when he retired June 30, 1942, died in Appleton, Wisconsin, November 7, at the age of 87.

Mr. Kirk entered the Weather Bureau as an Observer at Vicksburg on June 13, 1901. He later served at Seattle, Pueblo, Huron, Raleigh, Columbus, and Boston before transferring to New Haven on October 7, 1935.

Mr. Kirk is survived by a son, Harlan S. Kirk, 218 North Union, Appleton, Wisconsin.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