when the layers of air to great heights have reached their maximum upward expansion offers the greatest air density far aloft, and, therefore, the best chance of breaking an altitude record. It seems likely that Lieut. Macready actually flew in air more rare than any previously reached.—*C. F. B.*

The Libyan Desert, although practically barren of vegetation, supports numbers of birds, snakes, lizards, insects, foxes, jackals, and mice. —*Sci. Serv.*

The longest existing continuous rainfall record is that at Padua, Italy, which has been kept since 1725.—*Sci. Serv.*

"Weather, Crops and Markets" has dropped the weather and become "Crops and Markets"; while the Weather Bureau has begun issuing a "Weekly Weather and Crops Bulletin," 25 cents a year.

In many mountain valleys (of the northern Alps) ten feet of snow fell between the 23rd and the 27th of December, 1923.—*Met. Mag.*, London, Jan., 1924, vol. 58, p. 292.

Running Away From Weather. The first result of man's study of the weather was apparently to run away from it. Sir Napier Shaw, the English authority on meteorology, points out that the first civilization of which we have much record, that of Egypt, existed where there was really no weather. This civilization may have been the result, he says, of a migration of all the bright individuals or races from other parts of the world, who fled their inclement native climes and settled in Egypt. A similar movement seemed to be in progress at the present day.—*Science Service.*

NOTES ON WEATHER BUREAU SERVICE

The weekly clip sheets issued by the press service of the U. S. Department of Agriculture contain numerous notes on Weather Bureau work and popular fallacies. Professor C. F. Talman, Weather Bureau Librarian, is the author. The clip sheets for release in the weeks beginning December 10, 1923, to January 14, 1924 contain 11 Weather Bureau news notes, and 5 on popular fallacies. The news notes are reprinted below. Those on popular fallacies are entitled: Draws distinction between a cyclone and a tornado; If rain follows a battle there's a simple reason; Moon's influence negligible, says U. S. Weather Bureau; Effect of the Gulf Stream on U. S. Weather is slight (a title not correctly reflecting the contents); and Weather Bureau says there are no equinoctial storms. In two other notes, not from the Weather Bureau, there is information of interest to meteorologists: one says that 36 per cent of the fires in national forests in 1922 were caused by lightning; the other tells of maple-sugar weather.

How Upper Air Observations Aid Weather Forecasting

The observations of the winds at high levels made twice a day at a number of Weather Bureau stations both serve the needs of aviators and also supplement the observations at the earth's surface on which weather forecasts are based.

The Atlantic coast storm of October 23-24, instead of following the usual track of such storms, northeastward along the coast north of Cape Hatteras, followed a most exceptional course from the vicinity of Cape Hatteras to eastern Lake Erie. The rain area attending this storm extended far to the west and the northwest of the region in which rainfall ordinarily occurs in connection with coast storms.

Forecasters of the Weather Bureau of the United States Department of Agriculture state that there was nothing on the daily weather maps, as drawn from the ordinary surface observations, to suggest that the storm would take this unusual course, but that pilot-balloon flights and the observed movements of the upper clouds for a day or two preceding the storm showed that at an altitude of two or three miles the winds were blowing from a southerly instead of from a westerly quarter, as they usually do at these levels. This abnormality in the upper winds justified the prediction on the morning of October 23 that the storm would move north-northwestward, as it did, and that the accompanying rains would extend over the Appalachian Mountain region and into the upper Ohio valley and lower lake region.

Where Kites and Balloons Give Free-Air Information

In connection with its aerological investigations the Weather Bureau of the United States Department of Agriculture makes many free-air observations by means of kites and balloons. This work has become an important part of the bureau's program. Observations with kites during the last year were made regularly at Broken Arrow, Okla.; Drexel, Nebr.; Due West, S. C.; Ellendale, N. Dak.; Groesbeck, Tex.; and Royal Center, Ind. Kite flights are made daily whenever possible, and, in addition, when conditions are favorable, continuous series of flights are made for periods of 24 to 36 hours. Records of air pressure, temperature, humidity, and wind are thus obtained.

Observations by means of pilot balloons were made at the six kite stations, above listed, and at Burlington, Vt.; Denver, Colo.; Ithaca, N. Y.; Key West, Fla.; Lansing, Mich.; Madison, Wis.; San Francisco, Calif.; San Juan, P. R.; and Washington, D. C. The observations are made twice daily at the six kite stations and at Key West, Fla.; and Washington, D. C., and once each day at the remaining stations, and the computed wind conditions at various heights are telegraphed to district forecast centers at Washington, D. C.; Chicago, Ill.; and San Francisco, Calif.; where they form the basis for "flying weather" forecasts issued to the military, naval, and postal aviation services.

Special observations have been made, when requested, for use in connection with such events as long-distance flights and free-balloon races.

Alaskan Forecast Service Protects Chicago District

The Alaskan forecast service of the Weather Bureau of the United States Department of Agriculture has a tremendous economic value to the commercial and marine interests in this country which would lose many perishable products without timely cold-wave warnings. Twice-daily observations from all accessible portions of the Alaska Territory are obtained from 11 stations with a gratifying degree of regularity by means of radio, telegraph, and cable (in most cases a combination of the three).

The active and cordial co-operation of the Signal Corps of the Army and the Office of Communications of the Navy has been essential to the success of this service. These reports are of inestimable value in the general forecast work of the bureau, especially in the issuing of storm warnings for the Pacific coast and cold-wave warnings for the Middle and Western States. It is estimated that the value of perishable products saved as the result of cold wave warnings issued last winter for the Chicago district alone exceed $10,000,000, although the winter was not an unusually severe one. (Winter 1922-23.)

The district forecaster, in commenting on these estimates, stated that it would have been impossible to issue these timely warnings so accurately if no reports from Alaska had been available. The estimates were for the Chicago district alone. Many other commercial districts in which the Alaskan observations were an equal factor in issuing cold-wave warnings therefor were similarly benefited.

Special Weather Warnings to Fruit Shipping Company

The Weather Bureau of the United States Department of Agriculture has just made arrangements to give special warnings to resident messengers along the routes taken by the cars of the Fruit Dispatch Co., which ships great quantities of bananas. Whenever the temperature is 40° or below, and a drop of 10° or more is expected during the following 24 to 36 hours, along the route the cars will take, a message is sent by telegraph or telephone, at the expense of the dispatch company, warning the messenger to regulate the ventilators so as to protect the fruit in the cars. The greatest amount of damage to fruit is due to sudden and unexpected cold waves.

This service is an extension of the present "shippers' forecast" service of the bureau, and it will be handled from the various local stations in the region in which banana shipments are made, except on Saturday nights, Sundays, and holidays, when it will be taken care of by the district forecast centers at New Orleans and Chicago.

How Davenport (Iowa) People Use the Weather Forecasts

The Weather Bureau station of the United States Department of Agriculture at Davenport, Iowa, receives many requests for weather information from local persons. Sometimes these are sought for unusual and interesting reasons.

The manager of a large macaroni and cracker factory made arrangements to secure the forecasts each morning and information regarding humidity conditions for the following day. The company plans its work 24 hours ahead, and if a dry day is expected it is possible to bake and pack ginger snaps, cookies, etc., on the following day.

The manager of the cafeteria in the basement of the Davenport High School telephones the Weather Bureau office every morning when threatening weather prevails to learn whether it is likely to be raining at noontime. She provides food for the midday luncheon accordingly. On fair days many of the pupils go home for lunch, but on rainy days the number of customers is greatly increased, therefore a uniform quantity of food cannot be prepared every day without loss on fair days or insufficient provision on rainy days. There are 1,216 pupils attending Davenport High School this year.

The hunting season for wild ducks opens on October 15 in this section of the country. Sportsmen have camps down the river and near the lakes in Iowa and Illinois, where they go and camp for several days during the time that duck shooting is at its best. Shortly after the season opens this office is besieged with calls requesting information about the weather "up north" along the Canadian border. When a cold spell, with snow, appears over Manitoba and Minnesota it drives the wild ducks southward over Iowa and Illinois, and the enthusiastic hunters immediately leave for their respective camps. Unless cold weather appears along the border the hunters might be in their camps for weeks without getting a shot.

Frost Warnings Save Much Fruit

The fruit frost service of the Weather Bureau of the United States Department of Agriculture is of great value to the citrus growers of southern California, who are strongly organized to combat frost conditions and accomplish the saving of much fruit during periods of critical weather. The minimum temperature forecasts and special frost warnings during the current year were remarkably accurate. The various fruit growers' exchanges co-operated extensively with the bureau during the past year in giving financial and other assistance. Other fruit-frost activities were conducted during the year at Roswell, N. Mex.; Yuma, Ariz.; several Colorado districts; New Lisbon, N. J.; Wichita, Kans.; parts of Florida; Peoria, Ill.; and at two centers in Missouri.