derstorms, high winds, etc. These special reports included observations every two hours with pilot balloons at Hazelhurst Field, under the direction of Lieut. Paul S. Wagner, Signal Corps meteorologist; and information as to the occurrence of thunderstorms in adjacent States. The pilot balloon records gave data of great value in predicting changes in the wind conditions both at the surface and at higher levels. During its flight the *R. 34* was furnished with European reports and with messages from ships at sea. These reports were studied by the airship's meteorological officer, Lieut. Guy Harris, R. A. F., who, in addition to advising Maj. Scott as to the best routes to follow, so as to avoid head winds, thunderstorms, etc., also kept a detailed record of the meteorological features of the flight, including some fine photographs of clouds and fog. It is sincerely to be hoped that Lieut. Harris will give us a complete history of the trip from the meteorologist's point of view.

THE GEOSTROPHIC (GRADIENT) WINDS OF THE NORTH ATLANTIC.

(Abstracted from back of Monthly Meteorological Chart of the North Atlantic July, 1919.)

Although surface winds cross the isobars at a slight angle, even at sea, the winds at only a small elevation blow essentially parallel to the isobars. Therefore, "geostrophic," or gradient, winds, parallel to the isobars are of interest to aviators.

The prevailing geostrophic winds have been worked up for three points—two in the Atlantic Ocean, namely, lat. 50° N., long. 40° W., and lat. 50° N., long. 25° W., and for the Valencia Observatory. The methods employed were to make use of weather maps for a 28-year period for the two Atlantic points and for a six-year period at the Valencia station. The results are summarized in diagrams which show the frequency distribution of the winds for the periods covered. For Valencia they are grouped by seasons, and for the two Atlantic points simply for the month of June.

Comparison of the three diagrams for the summer months shows considerable uniformity of conditions. In all cases there is a preponderance of west and southwest winds and those from the east are rare. In lat. 50° N. and long. 40° W., winds are well distributed around the compass, for the centers of deep cyclones occasionally pass south of that point. A more important detail is the high frequency of the northwest winds as compared with those of the two points farther east. The distinguishing feature of the summer diagram for Cahirciveen (Valencia) is the comparatively large proportion of northeast winds.

Taking the four diagrams for Cahriciveen together, we notice the high proportion of strong "geostrophic winds" in winter and also in autumn. The preponderance of southwest winds which is so marked a feature of the winter and spring diagrams disappears entirely in autumn. Northeast winds are found to be characteristic of autumn as well as spring.—*C. L. M.*

CLOUD FREQUENCIES WITH VARIOUS WINDS.*

The Meteorological Chart for the North Atlantic for August gives two interesting charts showing the frequencies of clouds with winds of various directions at Valencia and at St. Johns, Newfoundland. At the Valencia Observatory, of 100 occasions on which the wind at night is from the north, there is a clear sky on six occasions, the sky is one-fourth clouded on 15, one-half clouded on 15, three-fourths clouded on 27, and overcast on 34; it is raining on two occasions and foggy on one. At St. Johns, the very great percentage of fog is the outstanding feature; indeed, it is only with a calm or a southwest or a west wind that clear weather is experienced—all winds sweeping in from the ocean bring a large percentage of fog. At both stations evening and night are the clearest. The general trend of the air at both stations is from the southwest, which, as was mentioned above, brings clear weather at St. Johns, but has quite the opposite effect at Valencia. While the data do not cover a long period of time, the charts are of value especially because of their relation to trans-Atlantic flying.—*C. L. M.*

* Cf. Prof. Notes No. 1, p. 572, below.