

German wireless telegraph station at Nauen, the law is deduced that wind velocities at different heights vary as the fifth-roots of the heights. At 512 meters the velocity is twice that at 16 meters. The diurnal variation of wind velocity at the surface with a maximum in the afternoon extends in winter only to a height of about 60 meters above the ground. Above that height the opposite type of variation is found, with a maximum in the night. The neutral zone between the two types is considerably higher in the Summer, probably at about 300 meters.—R. C[orless.]

551.55 (048)

THE RELATION BETWEEN PRESSURE-GRADIENT, WIND, AND FRICTION IN STEADY MOTION.¹

By F. ÅKERBLOM.

[Reprinted from Science Abstracts, Sect. A, Aug. 30, 1917, §731.]

On the assumption that motion of the air near the earth's surface could be treated like the steady motion of a particle, Guldberg and Mohn developed simple equations connecting wind velocity with horizontal pressure gradient, latitude, air density, and friction. In forming the equations it was assumed that friction acted in a direction opposed to that of the surface wind. Comparison with observations, however, showed that the equations were inapplicable to surface winds in the interior of continents, that coastal winds conformed more nearly with them, while observations at a single station at sea gave satisfactory agreement with them.

The author introduced the conception of friction acting in a direction different from that of the surface wind reversed, on the ground that the upper wind, which affects the surface wind by friction as well as the ground, usually differs in direction from that wind. Comparison with observations in Europe, America, and over the North Atlantic gives values of the angle between the direction of friction and the reversed direction of the surface wind which vary from 30° to 60° and are slightly greater over sea than over land. Over land the angle appears to show a maximum in the early afternoon and a minimum at night.—R. C[orless.]

551.576 (048)

THE FORMATION OF ANTICYCLONIC STRATUS.²

By C. K. M. DOUGLAS.

[Reprinted from Science Abstracts, Sect. A, Aug. 30, 1917, §727.]

The clouds here termed stratus, which include those of the stratus-cumulus type, are found, by observation from an aeroplane, to have an adiabatic temperature gradient below them and a reversed gradient above them. Within the cloud the gradient is usually adiabatic, and there is considerable turbulence. On the north and east sides of anticyclones there is nearly always a layer of stratus or of haze with cloud patches. The height of the layer varies between 3,000 and 6,000 feet. It is pointed out that stratus may be formed by the adiabatic compression of nonhomogeneous cloudy air, the layers of cloud where there is initially most free water present becoming less warmed than the layers above and below after the water has evaporated from these, and so giving rise to the reversed gradient above the remaining layer of cloud. A reversed gradient may also be formed at any layer above which there is a pronounced increase of westerly wind,

this westerly current being normally warm and tending to raise the temperature at its level. By the use of a formula put forward by Napier Shaw it is demonstrated that this is particularly likely to happen on the northern sides of anticyclones at any height where there is initially a smaller vertical temperature gradient than normal, the tendency being for this abnormality to become accentuated.—J. S. Di[nes.]

WINDWARD ISLANDS VS. LEEWARD ISLANDS.

The Washington office of the United States Weather Bureau recently received a query from our observer at Basseterre, St. Christopher, British West Indies, concerning the exact scope of the terms Windward Islands and Leeward Islands when used in the cabled storm warnings of this bureau. As the Weather Bureau is now

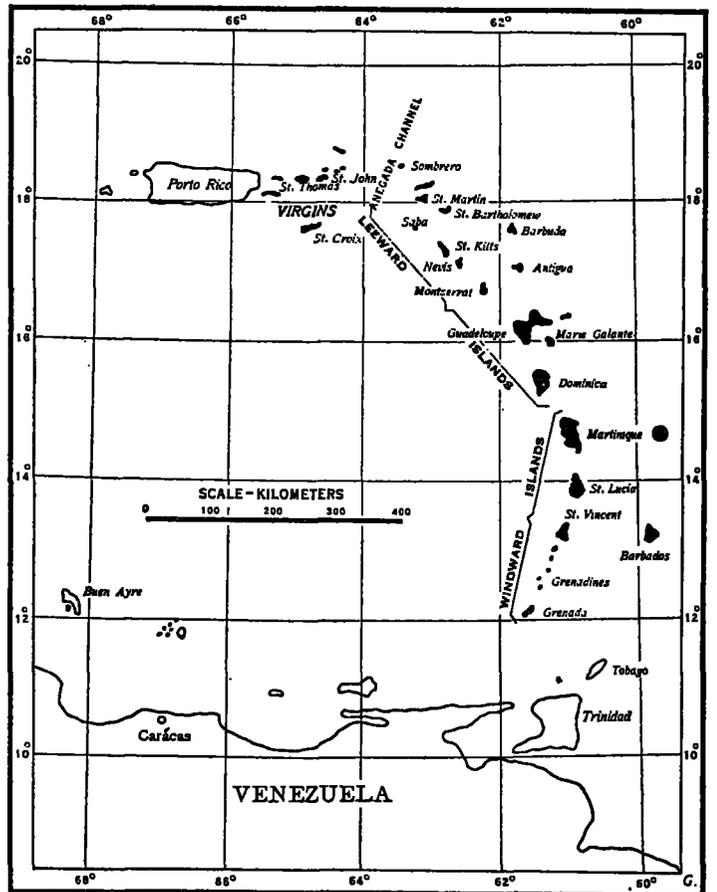


FIGURE 1.—Sketch map outlining the Windward and the Leeward Islands as now defined.

engaged in extending its network among the islands of the West Indies, and probably will soon begin to make numerous references to the islands, this question is one of considerable immediate interest. In view of the somewhat confusing usage in existing atlases it seemed desirable to submit the question to the United States Geographic Board for a statement as to the preferred usage, the following was received in reply:

UNITED STATES GEOGRAPHIC BOARD,
Washington, D. C., Oct. 16, 1917.

Prof. CHARLES F. MARVIN,
Chief of Weather Bureau.

DEAR SIR: In reply to your inquiry of 9th inst., I have to say that considerable confusion has existed as to the application of the names "Windward Islands" and "Leeward Islands." Originally the name

¹ Ark. för Mat., astron., och fysik, Stockholm, 1916, 11, No. 18. 19 p.
² Proc., Roy. Soc., Edinburgh, 1916-17, 37:137-148.