A Science Service Feature

Released on receipt
but intended for use
March 14, 1927

? WHY THE WEATHER ? Mailed March 7, 1927

By Dr. Charles F. Brooks
of Clark University

LARGE PRESSURE CHANGE WITH LITTLE WIND

The man who watches his barometer usually expects strong winds when he sees the pressure changing rapidly. Under certain conditions, however, sudden pressure changes are accompanied by but little wind; or, on the other hand, a gale occurs while the barometer is stationary.

Quite commonly when a storm approaches, the relatively warm south wind arrives first aloft, where it replaces colder heavier air and so reduces the pressure at the ground. Near the surface, friction is greater and the air is likely to be coldest and hardest to dislodge. It may be some hours after the pressure begins to fall before the south wind can make itself felt at the ground. In the center of a stationary high, the pressure sometimes rises rapidly although a calm or light wind prevails. In this case, air piling in overhead more than balances the surface outflow. Such a condition occurs most frequently between two well developed storms.

In an extra-tropical storm, or low, it must be remembered, the wind velocity depends rather upon the differences of pressure than upon the motion of the storm center. A low on the weather map appears as a series of more or less concentric lines of equal pressure, or isobars. Isobars close together indicate a strong low with considerable change of pressure in a short distance, or a steep pressure gradient. The greater the difference the stronger the wind. If such a low is blocked and remains stationary, the pressure will not change at any one point, but the wind continues to blow. On the other hand, a weak low with isobars far apart may cause a rather rapid change in pressure if it passes rapidly. But the winds that attend it will be light because the pressure gradient is not steep.

SCIENCE SERVICE,
21st and B Sts.,
Washington, D.C.