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A Science Service Feature

? WHY THE WEATHER ? Mailed September 16, 1931

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AIR TRAJECTORIES

Look at a daily weather map and you will notice at each station a little arrow showing the direction in which the wind was blowing at the station at 8 o'clock in the morning. The arrows "fly with the wind." Where a well-developed cyclone or "low" is shown, you will observe that the arrows indicate winds blowing spirally inward about the center in a direction contrary to that followed by the hands of a clock. The picture suggests that the air is in process of making complete circuits around the center, and meteorologists once thought that it did so, at the same time gradually rising in the core of the cyclone and eventually flowing outward above.

This belief overlooked the fact that the cyclone, as a whole, usually travels over the earth about as fast as the winds blow around it. Hence, before a particle of air has had time to make a complete circuit, the cyclone has moved away so that the particle is no longer under its influence.

Just a quarter of a century ago two British meteorologists, Shaw and Lempfert, introduced the practise of drawing so-called "air trajectories," based on series of weather maps representing wind directions and velocities at hourly intervals. These trajectories show the actual movement of air particles within cyclonic areas, and the paths of these particles are found to have a great variety of forms; but, except in those cyclones, including many in the tropics, in which the speed of the winds is vastly greater than the speed of the storm's movement, they are never anything like closed curves around the cyclone centers.

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