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? WHY THE WEATHER ?

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TORNADOES AND DUST WHIRLS

A correspondent asks whether tornadoes, such as the one that lately visited St. Louis, are similar in origin to the little dust whirls often seen on dry roads and elsewhere in hot, calm weather. No, they are not.

The dust whirl is due to conditions at the earth's surface, while the tornado is always generated high up in the atmosphere. The former occurs generally over a stretch of level ground, which has become very hot under strong sunshine. The ground heats the adjacent air, which expands and becomes lighter, per unit volume, than the air at higher levels. A stagnant layer of relatively light air is thus formed next to the ground. The denser air above tends to descend and displace the lighter air, pushing it upward, but this cannot happen all at once over a considerable area. There are many little local currents, where warm air is rising and colder air descending, giving a shimmering appearance to the air near the ground. Now and then, because of some disturbance, an unusually large volume of the warm air breaks through the layer above at some point and rises in columnar form. Surface air flows in to the base of the rising column, but is generally directed to one side or the other of its center and thus forms a vortex, just as water does in flowing to a drain pipe. Once formed, a vortex of this kind may maintain itself for a considerable time, and may either remain stationary or travel over the ground. Dust, sand, dry leaves and the like are carried up by the whirl, making it visible.

The tornado is formed in the conflict of two streams of air flowing in different directions far above the earth. Many whirls are set up by such opposing currents, but only occasionally is one vigorous enough to work its way down to the ground as the dread tornado.

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