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THE STRENGTH OF STORM WINDS

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After every destructive storm, such as a tornado or a tropical hurricane, the question is heard: "How hard did the wind blow?" Strange to say, this very natural question can never be definitely answered, and for several reasons.

In the first place, wind-measuring instruments--anemometers--are scarce. Only a few hundred of them are in regular use in America. There is, therefore, only a slight chance of one being in just the right place, when a storm occurs, to measure its extreme violence. Next, nearly all anemometers are of the revolving-cup type. These instruments are subject to a number of well-recognized defects. The relation between the speed of the cups and the speed of the wind is variable with wind velocity and somewhat uncertain at all velocities. The worst defect of such anemometers is that they do not register the brief gusts, a fraction of a minute in duration, that occur in all strong winds. Yet it is the most violent of these gusts that do the most damage in a storm. Then, again, an anemometer exposed to a storm of exceptional violence is nearly always wrecked or blown away before the wind reaches its maximum.

Suppose, however, we knew the greatest velocity attained by the wind in a storm, would we then be able to say how great a force it exerted on buildings? Only approximately. Wind pressure on structures is fraught with many complications. It varies with the area of the exposed surface; it is augmented by a suction effect on the lee side of the structure; and it varies in an extremely complex way with the angle at which the wind blows against the surface.

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