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A Science Service Feature

? WHY THE WEATHER ?

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WIND STRUCTURE

That the wind for a considerable distance above the earth's surface is never steady and uniform from point to point, but is always made up of gusts and lulls, swirls and eddies, is evident to anybody who watches the smoke from a chimney in even moderately windy weather, yet this obvious fact was generally ignored by meteorologists until the latter part of the nineteenth century. The Belgian meteorologist, Houzeau published some remarks on this subject in 1883, but the matter was first brought prominently to the attention of the scientific world in 1894, when S. P. Langley published his classic paper on "The Internal Work of the Wind," based on studies he had been making since 1887 in order to explain the soaring flight of birds. The movements that Langley discussed under the designation of "internal work," and that Houzeau describes as the "texture" of the wind, are now usually referred to as "wind structure." In recent years they have been the subject of much research, especially with a view to the needs of aeronautics. Wind structure was well described by Langley a generation ago as follows:

"The wind as a whole is not a thing moving all of a piece, like the water of the Gulf Stream. Far from it. The wind, when we come to study it, is found to be made up of innumerable currents and counter-currents, which exist all together and simultaneously in the gentlest breeze, which is in reality going fifty ways at once, although, as a whole, it may come from the east or the west; and if we could see it, it would be something like seeing the rapids below Niagara, where there is an infinite variety of motion in the parts, although there is a common movement of the stream as a whole."

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