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? WHY THE WEATHER ?

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WHY CLOUDS LEAN

Like people, clouds usually lean in the direction they are going; but the cause of the leaning is not the same for us as for clouds. Furthermore, the stronger the wind is against us the more we must lean on it, and the stronger the wind the more the cloud usually leans. But, here again, the leaning is quite different, for while we lean against the wind the cloud usually leans with it.

When we speak of a cloud leaning, we must be referring to a cloud that has appreciable vertical extent. If it did not, of course it could not lean. In a quiet atmosphere tall clouds may stand erect. Sometimes, though rarely, in a windy atmosphere they may be nearly vertical. But this is possible only when the speed and direction of motion of the base is the same as that of the middle and top.

Friction with the earth's surface and the greater density of the lower air are the two factors responsible for the usual increase of wind velocity upward. This of course, results in the more rapid movement of the tops of clouds than of their bases, which is particularly pronounced in the case of low clouds formed by the upthrusting of air that has just been in contact with the ground. Such air, and the clouds forming in it, moves more slowly than the freer wind it enters, but the stronger wind accelerates the cloud, so that upper portion, formed first and longer affected by the stronger wind moves ahead of the base. Thus the cloud leans forward.

At greater heights in the free air, the increasing velocity with decreasing density is usually responsible for the usual forward leans of higher clouds. These are not so pronounced, however, as in the lower.

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