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How books are wet by water JUNGCHUL KIM, HO-YOUNG KIM, Seoul National University — It is well known that a sheet of paper, a hydrophilic porous medium, imbibes water via capillary action. The wicking on two-dimensional sheets has no preferred direction, in general. However, when water is spilled on a book, a number of pieces of paper fastened together on one side, we notice that corners are wet first compared to the rest of the area. This is because the wicking along the sharp corner experiences weaker resistance than that into pores within paper. We study a simple model of this wicking dynamics in the context of the surface-tension-driven vertical rise of a liquid along a corner of folded paper. We find that the liquid height at the corner follows a power law different from that at the corner formed by impermeable walls (A. Ponomarenko, D. Quere, and C. Clanet, J. Fluid Mech. 666, 146-154, 2011). The difference is caused by the fact that the Laplace pressure that drives the vertical rise is independent of the liquid height on permeable walls (paper) while it increases with height at the corner of impermeable walls. The experiments are shown to be consistent with our theory

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