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How Darcy's Law sparked various fields of subsurface hydrology.

Gerrit H. de Rooij
Helmholtz-Zentrum fuer Umweltforschung - UFZ, Department Bodenphysik, Halle (Saale), Germany (gerrit.derooij@ufz.de)

Henry Darcy built the drinking water supply system of the French city of Dijon in the mid-19th century. In doing so, he developed an interest in the flow of water through sands, and, experimented with water flow in a vertical cylinder filled with different sands. He found Darcy's Law in this way, and until this day it is the cornerstone of the theory of water flow in porous media. Darcy's Law was quickly adopted for calculating groundwater flow, which blossomed after the introduction of a few very useful simplifying assumptions that permitted a host of analytical solutions to groundwater problems, including flows toward pumped drinking water wells and toward drain tubes. In soil hydrology, Darcy's Law itself required modification to facilitate its application for different soil water contents. The understanding of the relationship between the potential energy of soil water and the soil water content emerged early in the 20th century. The mathematical formalization of the consequences for the flow rate and storage change of soil water was established in the 1930s, but only after the 1970s did computers become powerful enough to tackle unsaturated flows head-on. In combination with crop growth models, this allowed Darcy-based models to aid in the setup of irrigation practices and to optimize drainage designs. In the past decades, spatial variation of the hydraulic properties of aquifers and soils has been shown to affect the transfer of solutes from soils to groundwater and from groundwater to surface water.
All this emerged from a law derived from a few experiments on a cylinder filled with sand in the 1850s. The poster tracks this development of groundwater hydrology and soil water hydrology through seminal contributions over the past 160 years.