

Growth by Groundwater Flow

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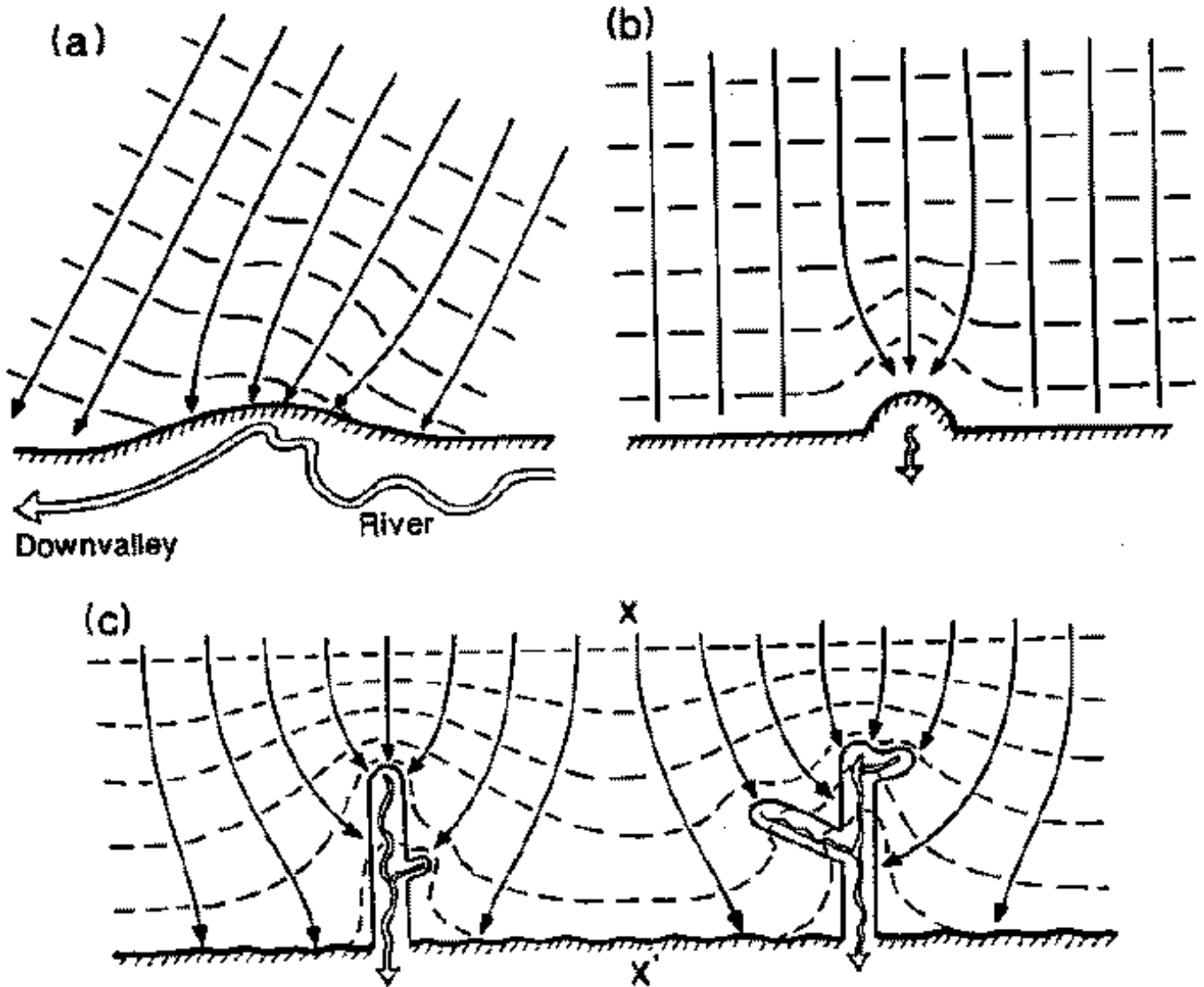


Figure 11. Plan view of the perturbations of a groundwater flow net that lead to the extension of spring heads to form a drainage network. Solid arrows are flow lines, dashes indicate equipotentials. (a) Concentration of flow at a boundary perturbed by an outside agent. (b) Concentration of flow caused by a small seepage failure localized by a lithological heterogeneity. (c) Increased convergence of flow lines around neighboring spring heads that have retreated into a land mass. Tributary valleys form as a result of secondary perturbations of the flow field due to the same geometric or hydrogeologic factors. Convergence on the spring heads leads to divergence of flow between the valleys (After Dunne, 1980.)