

known. As stated in a former section, it may reach as far as the intensely heated interior of the planet, for, as the already quoted researches of Daubrée have shown, capillary water can penetrate rocks even against a high counter-pressure of vapor (ante, p. 520). Probably the depth to which the water descends varies indefinitely according to the varying nature of the rocky crust. Some shallow mines are practically quite dry, others of great depth require large pumping engines to keep them from being flooded by the water that pours into them from the surrounding rocks. Yet, as a rule, the upper layers of rock in the earth's crust are fuller of moisture than those deeper down.

Underground Circulation and Ascent of Springs.—The water which sinks below ground is not permanently removed from the surface, though there must be a slight loss due to absorption and chemical alteration of



Fig. 103.—Simple or Surface Springs.

rocks. Finding its way through joints, fissures, or other divisional planes, it issues once more at the surface in springs. This may happen either by continuous descent to the point of outflow, or by hydrostatic pressure. In the former case, rain-water, sinking underneath, flows along a subterranean channel until, when that channel is cut by a valley or other depression of the ground, the water emerges again to daylight. Thus, in a district having a simple geological structure (as in Fig. 103), a sandy porous stratum (*d*), through which water readily finds its way, may rest on a less easily permeable clay (*e*), followed underneath by a second sandy pervious bed (*c*), resting as before upon compara-