attention to the geological importance of this prolonged disintegration *in situ*. Mr. Pumpelly points out that, as masses of decomposed rock may be observed to a depth of over 100 feet, the surface of the still solid rock underneath presents ridges and hollows, succeeding each other according to varying durability under the influence of percolating carbonated water. In this kind of weathering, where erosion does not come into play, it is evident that the resulting topography must, in some important respects, differ from that of an ordinary surface of superficial denudation. In particular, rock-basins may be gradually eaten out of the solid rock. These will remain full of the decomposed material, but any subsequent action, such as that of glacier-ice, which could scoop out the detritus, would leave the basins and their intervening ridges exposed.[65]

Formation of Soil.—On level surfaces of rock the weathered crust may remain with comparatively little rearrangement until plants take root on it, and by their decay supply organic matter to the decomposed layer, which eventually becomes what we term "vegetable soil." Animals also furnish a smaller proportion of organic ingredients. Though the character of soil depends primarily on the nature of the rock out of which it has been formed, its fertility largely depends on the commingling of decayed animal and vegetable matter with decomposed rock.

A gradation may be traced from the soil downward into what is termed the "subsoil," and thence into the solid rock underneath (Fig. 100). Between soil and subsoil a marked difference in color is often observable, the former being yellow or brown, when the latter is blue, gray, red, or

[65] Pumpelly, Amer. Journ. Sci. 3d ser. xviii. 136; L. S. Burbank, Proc. Bost. Nat. Hist. Soc. xvi. (1874), part 2, p. 150.