

dry clay or chalk; plastic, when, like moist clay, it can be worked into shapes; pulverulent, when it falls readily to powder; earthy, when it is decomposed into loam or earth; incoherent or loose, when its particles are quite separate, as in dry blown sand.

4. **Color and Lustre.**—These characters vary so much, even in the same rock, according to the freshness of the surface examined, that they possess but a subordinate value. Nevertheless, when cautiously used, color may be made to afford valuable indications as to the probable nature and composition of rocks. It is, in this respect, always desirable to compare a freshly-broken with a weathered piece of the rock.<sup>73</sup>

*White* indicates usually the absence or a comparatively small amount of the heavy metallic oxides, especially iron. It may either be the original color, as in chalk and calc-sinter, or may be developed by weathering, as in the white crust on flints and on many porphyries. *Gray* is a frequent color of rocks which, if quite pure, would be white, but which acquire a grayish tint by admixture of dark silicates, organic matter, diffused pyrites, etc. *Blue* or *bluish-gray* is a characteristic tint of rocks through which iron-disulphide is diffused in extremely minute subdivision. But as a rule it rapidly disappears from such rocks on exposure, especially where they contain organic matter also. The stiff blue clay of the sea-bottom which is colored by iron-disulphide becomes reddish-brown when dried, and then shows no trace of sulphide.<sup>74</sup> *Black* may be due either to the presence of carbon (when weathering will not change it much), or to

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<sup>73</sup> Alterations of the colors of minerals and rocks are effected by heat and even by sunlight. See Janettaz, Bull. Soc. Géol. xxix. (1872), p. 300.

<sup>74</sup> J. Y. Buchanan, Brit. Assoc. 1881, p. 584.