

It appears, therefore, that two changes take place in upright marble slabs freely exposed to rain in our burial-grounds—a superficial, more or less firm crust is formed, and the cohesion of the particles beneath is destroyed.

The crust varies in colour from a dirty gray to a deep brown-black, and in thickness from that of writing-paper up to sometimes at least a millimetre. One of the most characteristic examples of it was obtained from an utterly decayed tomb (erected in the year 1792) on the east side of Canongate Churchyard. No one would suppose that the pieces of flat dark stone lying there on the sandstone plinth were once portions of white marble. Yet a mere touch suffices to break the black crust, and the stone at once crumbles to powder. Nevertheless the two opposite faces of the original polished slab have been preserved, and I even found the sharply-chiselled socket-hole of one of the retaining-nails. The specimen was carefully removed and soaked in a solution of gum, so as to preserve it from disintegration. On submitting the crust of this marble to microscopic investigation, I found it to consist of particles of coal and soot, grains of quartz-sand, angular pieces of broken glass, fragments of red brick or tile, and organic fibres. This miscellaneous collection of town dust was held together by some amorphous cement, which was not dissolved by hydrochloric acid. At my request my friend Mr. B. N. Peach tested it with soda on charcoal, and at once obtained a strong sulphur reaction. There can be little doubt that it is mainly sulphate of lime. The crust which forms upon our marble tombstones is thus a product of the reaction of the sulphuric acid of the town rain upon the calcium carbonate of the stone. A pellicle of amorphous gypsum is deposited upon the marble, and encloses the particles of dust which give the characteristic sooty aspect