

rock, an obscurity almost hopeless involves formations of this class. Thus, in those rocks of a finely granular texture, to which the term basalt is applied, the precise determination of the constituent principles is a matter of the greatest difficulty. Since the augite rock is often seen to pass by insensible gradations into well characterized basalt, many continental geologists define it as having for constituent principles, felspar, augite, and oxidulous iron, occasionally blended with olivine, hornblende, &c. or even as complete augite: yet a considerable portion of the rocks to which this term has been applied in England, appear to consist principally of hornblende, as their characteristic ingredient, although they often also contain imbedded crystals of augite. Besides the inherent difficulty of the subject, it is to be regretted that little attention has been paid by our English geologists with the exception of Dr. Mac Culloch, to the precise determination of the mineralogical character of these rocks: we are therefore not able at present to speak without great hesitation concerning them; and shall regard ourselves as fortunate, if these observations may have any effect in directing enquiry to this point.

The most usual characters of the basaltic rocks of England, are, an iron-grey colour approaching to black; a considerable tenacity and hardness, a sharp and sometimes conchoidal fracture, a granular aspect often reflecting light from a number of brilliant spots or striæ, some of which seem to be felspar, others hornblende or augite; very liable to superficial decomposition, in which case, the colour passes from the further oxydation of the contained iron, to a rusty brown, often mingled with spots of green, arising apparently from the grains of hornblende. Often this decomposition penetrates to a considerable depth and distance into the mass of these rocks; in which case numerous spherical masses, interspersed throughout the mouldering mass, occur; having a nucleus of unaltered or less altered basalt, surrounded by concentric coats in successive stages of disintegration. These rocks are fusible; at a low degree of heat; and attract the needle strongly in consequence of the low state of oxydation of the iron which they contain. The specific gravity of the basalt of Staffordshire is 2.86; and on the analysis of 100 parts by Dr. Withering, yielded silex 47.5, alumine 32.5, oxyd of iron 20. From the less perfect state of chemical analysis at that time, the soda probably contained in it escaped observation.

Besides the distinctly crystallized varieties of trap, as greenstone and augite rock, and the granular, as basalt, two other species occur; one merely arising from variety of texture, being a porphyroidal trap, formed by crystals of felspar disseminated