

gether, that differences would be found to exist in their chemical composition, all which proved fully justified in their result before the essential value of this character was acknowledged. This was no doubt in great measure owing to the high importance set by the German mineralogists on those external characters of touch, sight, weight, color, and other sensible qualities, which are little susceptible, with the exception of weight, of exact determination, and which are subject to material variations, in different specimens of the same mineral. By degrees, however, the necessity of ascribing great weight to a character so definite was admitted, especially when it was considered that the same step which pointed out the intimate connection of external form with internal structure furnished the mineralogist with the means of reducing all the forms of which a mineral is susceptible under one general type, or primitive form, and afforded grounds for an elegant theoretical account of the assumption of definite figures *ab initio*.

(328.) A simple and elegant invention of Dr. Wollaston, the reflecting goniometer, gave a fresh impulse to that view of mineralogy which makes the crystalline form the essential or leading character, by putting it in the power of every one, by the examination of even the smallest portion of a broken crystal, to ascertain and verify that essential character on which the identity of a mineral in the system of Haüy was made to depend. The application of so ready and exact a method speedily led to important results, and to a still nicer discrimination of mineral species than could before be attained; and the confirmation given to these results by chemical analysis stamped them with a scientific and decided character which they have retained ever since.

(329.) Meanwhile the progress made in chemical analysis had led to the important conclusion that every chemical compound susceptible of assuming the solid state, assumed with it a determinate crystalline form; and the progress of optical science had shown that the fundamental crystalline form, in the case at least of transparent bodies, drew with it a series of optical prop-