

basaltic series (see Pl. XVII. fig. 3), but the most characteristic forms, and probably also the most frequent, are extremely thin rhombic tables. As by the disintegration of the palagonite these little crystals of plagioclase are sometimes detached from the matrix and found in a free state in the clay, we have been able to study them in an isolated condition, and to determine with exactitude their form and nature. It may be mentioned in passing that these rhombic tables of felspar play an important role among the minerals present in the deposits of those regions where the basic glasses are abundant. When these tables embedded in the vitreous fragments are examined by means of transparent slides, they are seen to be so thin that the vitreous material still covers them on all sides, and at first sight one might regard their contours as traces of regular fractures of the mass in which they are enclosed; this aspect is represented in Pl. XVII. fig. 2, where near the base of the figure two of these little crystals can be seen in a mass of red altered glass, their contours being almost entirely hidden by the enclosing matrix. In other preparations they are better developed, and on account of their thickness can be readily recognised, as, for instance, in the vitreous altered fragment represented in Pl. XIX. fig. 1. The lapilli here represented is remarkable for the abundance of these rhombic lamellæ, the fundamental vitreous mass being decomposed into palagonite; in certain points the manganese has infiltrated and masked the palagonitic matter by its deep brown tint. On this background the unaltered sections stand out in relief, with the exception of some parts of their surface still covered by a thin vitreous layer or coloured by manganese.

These plagioclase crystals show a colourless transparent mass, in which the following forms may be observed:—The most frequent forms are flat tabular crystals, with the clinopinakoid especially developed. Individuals of the columnar type, elongated in the direction of the edge P/M, are rare. These tabular crystals consist essentially of a combination of the clinopinakoid with P and α , more rarely with P, u , and y , and occasionally α and y appear together. In the first case the crystals have the form of a rhomb, in the second case they are elongated through the predominance of either α or P. The dimensions of those crystals which were examined and measured lie between 0.61 mm. broad and 1 mm. long as maximum, and 0.015 mm. broad and 0.042 mm. long as minimum. The extinction of the plagioclase is negative. Its value was found to vary between 22° and 32° on the clinopinakoid, and between 8° and 16° on the basal plane. The average values of many measurements made on good crystals are as follows:— $24^\circ 12'$, $25^\circ 6'$, and $29^\circ 6'$ on the clinopinakoid; $10^\circ 42'$ on the one side, and $10^\circ 18'$ on the other side, of the twinning line, as this is shown on the basal plane. Polysynthetic individuals, made up of repeated twins on the albite plan, were very rarely observed. The felspar, in its optical properties, is thus seen to be between labradorite and bytownite. The twin growths are particularly frequent, and interesting on account of the structure of the individuals. In addition to those of the albite type, others were observed in