

ART. LVII.—*On a crystal of Andalusite, from Delaware Co., Pa. ;*
by EDWARD S. DANA.

THE annexed figures represent a remarkable crystal of andalusite, from Upper Providence, Delaware Co., Penn., received by Professor Dana from Dr. George Smith, and now in the Yale College Cabinet. Figure 1 shows the crystal (natural size) with the planes as actually occurring. It will be noticed that while all the known planes, with one exception ($i\bar{2}$), are present, there is an irregularity in their occurrence almost amounting to a kind of hemihedrism; $1\bar{1}$ and $i\bar{2}$ appear but once, instead of twice, and $i\bar{2}$, $2\bar{2}$, and 1 once, instead of four times.

Figure 2 shows the crystal in its theoretical form, with all the planes as they would regularly occur. $I\wedge I$ gave $88^{\circ} 15'$ (that is, $91^{\circ} 45'$), and O on the macrodiagonal section the angle 93° to 94° ; this obliquity, however, is not in the right direction to explain the partial hemihedrism.

By the kindness of Mr. Vaux and Mr. Joseph Willcox of Philadelphia, I was enabled to examine other fine specimens from the same locality. The number of planes occurring on these crystals (one of which weighed more than 7 lbs.), was small, and there was nothing in their manner of occurrence to suggest that the peculiarity of the crystal figured was anything more than an accidental irregularity. In all of these specimens there was a great diversity in the prismatic angle, and obliquity in the angle of O upon the diagonal sections was very common.

A word should also be added in regard to the cleavage in the specimens from Delaware Co. In most cases it was irregular, many of the crystals having a fibrous, tremolitic structure, and in others it was radiated. The regular cleavage parallel to the prismatic faces, however, did occur, and a chemical analysis of several of the specimens is needed to determine whether in the former case any change in constitution had taken place.