MINERALOGICAL NOTES: No. III.—AXINITE, PETTERDITE, CROCOITE, AND DATOLITE.

By C. ANDERSON, M.A., B.Sc., Mineralogist.

(Plates xxix.—xxxiii.).

AXINITE.

BOWLING ALLEY POINT, NEAR NUNDLE, NEW SOUTH WALES.

(Plate xxix.).

Axinite was first found at this locality by Mr. D. A. Porter,[1] to whom I am indebted for notes as to its mode of occurrence. The exact location is about a quarter of a mile from the foot-bridge over the Peel River, where the mineral is found associated with green epidote in sedimentary rocks much altered by intrusive diorite; it occurs sometimes in crystalline veins, but the best specimens are obtained in cavities, where the crystals have grown freely, accompanied by small well-formed quartz prisms. Good crystals are rare and minute; larger, more imperfect ones can be found measuring up to 15 mm. The colour is brownish with a violet tinge on a fresh fracture.

Three of the best crystals, each measuring about 3 mm., were removed from the matrix, and their faces determined on a two-circle goniometer; owing to their mode of attachment the crystals were fractured in removal along a line roughly parallel to the edge $b\ x$ (Pl. xxix., figs. 3, 4). After several trials the habit was made out, but it was found impracticable owing to the small size and unsatisfactory nature of the prism faces to centre the crystals in the conventional position; instead, the most prominent zone—either [010, 111] or [1$\bar{3}$0, 021]—was made equatorial and the available angles determined, after which the crystal was inverted, and, with the same zone as before equatorial, the angles yielded by the faces on the other end measured. By plotting the co-ordinates in stereographic projection, the forms were easily identified by the aid of Penfield's invaluable protractors. From the measurements, the normal angles were calculated for comparison with the theoretical values calculated from Goldschmidt's "Winkeltabellen."[2] This method, though it does not afford direct comparison of measured with calculated angles, is sufficient to prove the correctness of identification.

In habit the crystals are uniformly tabular on r (1$\bar{1}$1), which

[1] Liversidge—Journ. Roy. Soc. N.S. Wales, xviii., 1884 (1885), p. 45; Porter—*Ibid.*, xxii., 1888 (1889), p. 82.

[2] Goldschmidt—Krystallographische Winkeltabellen, 1897, p. 58.