edge *c/b*. They advance more or less regularly following the radii, growing gradually larger as they approach the periphery; this structure, however, is not quite what is denominated fibro-radiate. The individuality of each crystal is too well marked; properly speaking, it is a radiate structure. The section cuts some of the crystals more or less parallel to the axis of elongation, and the extremity is then seen to be terminated by the faces *m/m*. Zones of growth may be observed upon these microliths, indicated by inclusions of the limonitic and manganiferous mud; in many cases these zones do not present a well-marked direction, but sometimes the inclusions are arranged and disposed *en chevron*, which might answer to the arrangement of the hemitropic lamellæ observed upon the face *b* of crystals of phillipsite. Even in these pretty large crystals of the spheroliths it is very difficult to discern the optical properties exactly, and this difficulty is increased by reason of the wedge-shaped form affected by each of the individuals; in the spheroliths the properties of the individual crystals, as in the case of a twin, lose all regularity. Pl. XXII. fig. 2 shows one of the spherules cut nearer to the surface, consequently the section cuts the radial crystals near their external extremity. Sometimes the form of the sections is a parallelogram more or less elongated, or approaches to a square, according as they are cut more or less normally to the edge *c/b*; this is what the crystals of phillipsite should give when cut across in such a section. Sometimes sections with re-entrant angles are also observed, and are the traces of crossed twins; two or three such sections are seen in the spherule figured, at the upper right-hand side of the figure.

Chemical Composition.—From the physical characters just described, it is evident that these crystals belong to the species phillipsite, and the results of the following analyses confirm this determination. The material chosen for the analyses was as pure as it could be obtained by decantation, or by the aid of dense liquids, without being cleaned with acid.[1]

Station.	Depth.	No.	Loss on ignition.	SiO_2	Al_2O_3	Fe_2O_3	MnO	CaO	MgO	K_2O	Na_2O	H_2O	Total.
275	2610	89	7·59	47·60	17·09	5·92	0·43	3·20	1·24	4·81	4·08	9·15	101·11
275	2610	90	7·35	49·88	16·52	5·54	0·44	1·38	1·20	5·10	4·59	9·33	101·33
275	2610	91	9·47	48·70	17·58	6·17	...	1·70	1·02	4·83	3·75	7·95	101·17

The presence of iron and manganese must be placed against the coatings and inclusions of the crystals. Apart from these foreign matters, the composition shown by the analyses corresponds closely with the average composition of phillipsite, except in the case of the alumina, the percentage of which is rather below the average; this deviation

[1] In Appendix III. will be found three additional Analyses (Nos. 20, 21, and 92), which were made from impure material or are incomplete, and need not be specially referred to here.