92. Phillipsite.—Station 276.

Lat. 13° 28′ S., long. 149° 30′ W., 2350 fathoms (Dittmar).

This specimen (which amounted to only a very few grams), when viewed under the microscope, appeared to consist mainly of tufts of yellow well-shaped crystals mixed with brown amorphous matter and black roundish particles. I tried a variety of methods for isolating the crystals, such as treatment with cold dilute hydrochloric acid, dilute sulphuric acid, oxalic acid, &c., but did not succeed; the crystals themselves were too readily disintegrated by acids. On the other hand, even treatment with hot hydrochloric acid left more than mere hydrated silica; I therefore decided upon separating the subtance into two parts by means of hot hydrochloric acid and analysing separately the disintegrated portion (including soluble silica of residue), and the de-silicated residue. Such an analysis accordingly was started, but unfortunately it was lost through a serious oversight in the manipulation of the silicas, and not caring to risk the small remnant of substance that was left in comparatively difficult processes, I simply analysed it as it was, *i.e.*, without previously separating it into two parts. The first analysis served to check some of the numerical results, and as the agreements were satisfactory, the following analysis may be said to rest partly on double determinations.

Sketch of Method of Analysis.—A known weight (0·6068 grm.) of air-dry powdered substance was placed in a platinum boat and dehydrated in a current of dry air, first at 100°, then at a red heat (within a combustion tube), the volatilised water, in the second case, being collected in a tared chloride-of-calcium tube. The residue was weighed, transferred to a platinum crucible, again weighed, and then ignited *strongly*, when it suffered an additional loss of weight. The residue was fused with carbonates of potash and soda and analysed as usual. In a separate portion the alkalies were determined according to Lawrence Smith.

Found in 100 parts of substance :—

	Per Cent.	In multiples of combining weights.
Silica,	57·85	1·000
Alumina,	20·09	0·203
Ferric oxide,	8·59	0·0555
Manganous oxide,	2·51	0·0362
Lime,	5·43	0·1006
Magnesia,	3·10	0·0804
Potash,	3·95	0·0436
Soda,	1·31	0·0218
	102·83	
Error,	2·83	
	100·00	
Water vol. at 100°,	9·74	: $H_2O = 0·5612$ (*a*)
Water vol. at redness,	10·56	: $H_2O = 0·6085$ (*b*)
Further loss at strong red heat,	4·83	: $H_2O = 0·2785$ (*c*)
	Sa 125·13	

Assuming the "Fe_2O_3" reported to have been FeO (in the substance), we have for the co-efficients of

	SiO_2	Al_2O_3	RO	R_2O	H_2O (*c*)	H_2O (*b*)	H_2O (*a*)
	1	0·203	0·328	0·065	0·2785	0·6085	0·5612
or	SiO_2	Al_2O_3	RO	R_2O	H_2O		
	5	1·015	1·64	0·325	7·24		
or	5	1	2		7 (about)		

The substance, then, *would appear* to be a kind of (mixed) zeolite, of the formula

$$\left.\begin{matrix} Al_2O''' \\ 2RO \\ 5H_2O \end{matrix}\right\} 5SiO_2 + x\,Aq\,;$$