interstratification of beidellite and montmorillonite end members.

DTA charts show a characteristic endothermic doublet with maxima centered at 110° and 182° C. Another endothermic reaction starts at about 600° C. and reaches a maximum at 670° C. The low temperature doublet peak is generally correlated with saturation with a divalent exchangeable cation. An endothermic maximum near 700° C. is considered to be characteristic of montmorillonite as contrasted with an endothermic maximum at 550° C. for beidellite, (Greene-Kelly, 1957).

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COMPOSITION OF PALERMOITE[1]

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An account of this new species from the Palermo pegmatite at North Groton, New Hampshire, has been given by Mrose (1953). Neither the

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analysis nor the formula suggested, $(Li,Na)_4SrAl_9(PO_4)_8(OH)_9$, affords a satisfactory interpretation of the unit cell contents. A new chemical analysis (Table 1) on a carefully prepared 2.1 gram sample taken from the type specimen establishes the formula as

$$(Li, Na)_2(Sr, Ca)Al_4(PO_4)_4(OH)_4$$

The analysis sample consisted of transparent grains and showed no trace of admixture on optical and *x*-ray examination.

An *x*-ray powder diffractometer pattern taken on a pressed mount of the analysis sample was indexed (Table 2), and the orthorhombic cell dimensions were refined from 20 selected reflections by the Burnham (1962) least squares program using an IBM 7094 computer. The new cell dimensions are

$$a\ 7.315 \pm .004,\ b\ 15.849 \pm .009,\ c\ 11.556 \pm .006\ \text{Å}$$

The relative line intensities vary slightly with different methods of sample mounting and photography. The calculated unit cell contents, summarized in Table 1, indicate that 4 of the cited formula units are present in the cell. The H_2O-(110°) was disregarded. The density is 3.22 (meas.), 3.24 (calc.).

TABLE 1. COMPOSITION OF PALERMOITE

	1	2	Atoms on basis of 20 (O, OH)			Measured unit cell contents (M.W. 2598.8)	
Li_2O	3.70	4.00	Li	1.766	2.06	6.958	8.12 (8)
Na_2O	1.56	1.32	Na	.281		1.107	
K_2O	0.10	0.10	K	.014		.055	
MgO		0.10	Mg	.016	1.01	.064	3.97 (4)
CaO	0.88	1.39	Ca	.164		.644	
SrO	9.20	12.93	Sr	.823		3.243	
BaO		0.10	Ba	.004		.017	
Fe_2O_3		0.30	Fe	.037	4.03	.098	15.82 (16)
Al_2O_3	33.85	30.83	Al	3.991		15.719	
P_2O_5	44.64	42.89	P		3.99		15.70 (16)
H_2O^-	5.97	0.30	H		3.93		15.47 (16)
H_2O^+		5.36	O		20		78.77 (80)
Total	99.90	99.69					

1. Palermoite. Gonyer analysis cited by Mrose (1953).

2. Palermoite. Jun Ito analysis, 1964. FeO, Zn, SO_3, Cl and F lacking; Si, Cu, Ga, Ag present in spectrographic traces.

Table 2. *X*-Ray Powder Spacing Data for Palermoite
Cu radiation, Ni filter, in Å. Relative line intensities in arbitrary chart units

I	d (meas.)	d (calc.)	hkl	I	d (meas.)	d (calc.)	hkl
33	7.900	7.924	020	19	2.213	2.214	330
19	5.772	5.778	002	25	2.181	2.180	224
17	4.876	4.874	121	16	2.142	2.141	260
33	4.670	4.669	022	9	2.124	2.123	125
64	4.360	4.359	112	32	2.050	2.050	154
9	4.287	4.283	130	6	2.024	2.026	172
7	3.656	3.657	200	5	2.0064	2.0080	262
21	3.404	3.408	103	5	1.9940	1.9940	323
52	3.320	3.321	220	4	1.9805	1.9811	080
12	3.267	3.268	042	16	1.9260	1.9260	006
60	3.129	3.131	123	7	1.8980	1.8990	271
						1.8715	026
100	3.089	3.090	202	5	1.8720	1.8740	082
		2.910	231				
53	2.905	2.908	150	9	1.8504	1.8498	116
8	2.714	2.714	024	20	1.8296	1.8288	400
10	2.682	2.687	240	9	1.7586	1.7573	334
44	2.643	2.649	114	9	1.7548	1.7565	136
48	2.596	2.598	152	16	1.7320	1.7322	046
46	2.436	2.437	242	45	1.6594	1.6592	370
29	2.408	2.410	310	31	1.6044	1.6058	156
10	2.269	2.267	204	15	1.5450	1.5451	404

The close dimensional relation of palermoite to carminite, $CaFe_2(AsO_4)_2(OH)_2$, has been noted by Strunz (1960).

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