THE AMERICAN MINERALOGIST, VOL. 48, JANUARY–FEBRUARY, 1963

XENOTIME AND THORITE FROM NIGERIA[1]

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The recent paper by Jefford (1962) describing xenotime from Nigeria brought to mind that in 1958 among numerous rare-earth minerals studied in this laboratory were Nigerian xenotime and thorite for which partial analyses were made by means of *x*-ray fluorescence methods. The xenotime concentrate was obtained through the courtesy of the London

TABLE 1. ANALYSES OF XENOTIMES FROM NIGERIA

	1	2
$(Y, Ln)_2O_3$	57.2%	60.52%
Al_2O_3	—	2.00
Fe_2O_3	1.85	0.35
ThO_2	1.1	0.95
V_3O_8	0.36	0.22
ZrO_2	5.1	2.66
SiO_2	—	2.93
Nb_2O_5	0.6	—
SnO_2	0.04	—
PbO_2	0.2	—
TiO_2	0.3	—
P_2O_5	—	29.46
Ign. loss	—	0.51
		99.60

1. Xenotime concentrate, Nigeria. By *x*-ray fluorescence.
2. Xenotime, Rayfield, N. Nigeria, Jefford (1962). By wet chemical methods.

Tin Corporation. The results of the two analyses of xenotime from Nigeria are compared in Table 1. The higher ZrO_2 content in 1) may reflect the presence of zircon as an impurity, although microscopic checks indicated $<1\%$ zircon as a contaminant.

In Table 2 the contents of the individual rare-earth elements are compared. Considering the difference in the analytical methods and that lutecium was not determined in 1), the agreement is unusually good. A general compositional uniformity of the xenotime, which occurs as an accessory mineral in alkalic granites of the Jos-Bukuru Younger Granite Complex together with columbite, is indicated.

[1] Contribution No. 252 from The Mineralogical Laboratory, Department of Geology and Mineralogy, The University of Michigan, Ann Arbor, Michigan.

TABLE 2. COMPARISON OF RARE-EARTH CONTENTS IN NIGERIAN XENOTIMES

	1	2
Y_2O_3	63. %	55.9%
Nd_2O_3	0.4	0.55
Sm_2O_5	0.8	0.76
Gd_2O_3	1.4	1.48
Tb_4O_7	0.6	0.79
Dy_2O_3	8.	8.25
Ho_2O_3	1.8	1.06
Er_2O_3	7.8	8.01
Tm_2O_3	1.2	1.86
Yb_2O_5	15.	19.3
Lu_2O_3	nd	1.58
	100.0	99.54

1. Xenotime concentrate, Nigeria. By *x*-ray fluorescence. Recalculated to 100%.
2. Xenotime, Rayfield, N. Nigeria, Jefford (1962). By optical spectrography.

The results of the partial analysis of the thorite are given in Table 3. The differences in contents of individual rare-earths between the xenotime and its accompanying thorite are, of course, marked, inasmuch as thorite is lanthanophile in its geochemical disposition (Heinrich, 1958).

TABLE 3. PARTIAL ANALYSIS OF THORITE FROM NIGERIA (BY MEANS OF *x*-RAY FLUORESCENCE)

ThO_2	40.4%
U_3O_8	4.0
PbO_2	0.1
SnO_2	3.6
Fe_2O_3	6.7
ZrO_2	1.5
HfO_2	0.1
P_2O_5	2.1
Y_2O_3	2.4
La_2O_5	0.7
CeO_2	2.2
Pr_6O_{11}	0.2
Nd_2O_3	0.6
Sm_2O_3	0.1
Gd_2O_3	0.2
Dy_2O_3	0.3
Ho_2O_3	0.1
Er_2O_3	0.2

These studies were supported by Michigan Memorial Phoenix Projects 150 and 204.

References

Heinrich, E. Wm. (1958) *Mineralogy and Geology of Radioactive Raw Materials*. McGraw-Hill Book Co., Inc., New York, p. 108.

Jefford, Godfrey (1962) Xenotime from Rayfield, Northern Nigeria. *Am. Mineral.* **47**, 1467–1473.

ERRATA, SANIDINE AND ORTHOCLASE PERTHITES

In a paper in *The American Mineralogist* (Emeleus, C. H. and Smith, J. V., 1959, **44**, 1187–1209), Fig. 4 was incorrectly drawn. In plotting the values of optic axial angle vs. composition, the amounts of Or and Ab+An were accidentally transposed. Because the compositions are near the half-way mark, the error is small as may be seen in the revised diagram given below. However, two specimens (G.105 and G.106) plot with their higher values of 2V significantly below the Orthoclase-Low Albite line. In both the range of 2V is extended by a single crystal with high values (compare mean and range) and in both instances the high values are those given by turbid and rather embayed crystals. In G.105, which is in contact with agglomerate composed of comminuted Newry Granodiorite, the crystal is a xenocryst, in G.106, taken one foot from the agglomerate there is xenocrystal material in the felsite and judging from the character of the crystal with high 2V it also is xenocrystal in origin. The corrected figure is given below.