have yielded values close to 206.03. The specimen described in this paper is particularly interesting in affording additional evidence that the atomic weight of Katanga lead is not constant and therefore by inference may contain common lead in varying proportions. This idea is substantiated by the recent work of Rose,[10] who finds the isotope Pb^{208} in a specimen of Katanga lead.

Summary

1. The atomic weights of certain radiogenic leads have been determined.

Source	Atomic weight
Cerussite, Wallace, Idaho, U. S. A. (common)	207.21
Samarskite, Glastonbury, Conn., U. S. A.	206.34
Pitchblende, Beaverlodge Lake, N. W. T., Canada	206.08
Pitchblende, Katanga, Africa	
Black, insoluble portion	206.04
Yellow, hydrochloric acid-soluble portion	206.05

2. It is pointed out that these values, together with the percentages of important components, point to the presence of several per cent. of common lead in all three radioactive minerals.

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[10] Rose and Stranahan, *Phys. Rev.*, **50**, 792 (1936).

[CONTRIBUTION FROM THE T. JEFFERSON COOLIDGE, JR., MEMORIAL LABORATORY OF HARVARD UNIVERSITY]

The Lead–Uranium Ratio of Beaverlodge Pitchblende

BY G. P. BAXTER AND M. E. AVERILL

A sample of the ground and mixed specimen of pitchblende from Beaverlodge Lake, N. W. T., Canada, which had been utilized in the determination of the atomic weight of lead described in the preceding paper, was analyzed for lead, uranium and thorium.

Weighed portions were first treated with 8 *N* nitric acid which dissolved the pitchblende but left most of the associated hematite insoluble. After separation, the hematite was dissolved in 7 *N* hydrochloric acid. Both solutions were evaporated to dryness, and siliceous residues were treated with hydrofluoric and sulfuric acids. Lead was separated from both solutions by evaporation with sulfuric acid, and the filtrate of the lead sulfate scavenged with hydrogen sulfide at suitable acidity. Lead so recovered was converted to sulfate and added to the main portions. All the lead sulfate was purified by solution in ammonium acetate and evaporation with sulfuric acid and the filtrate worked up for traces of lead.

Both the nitric and hydrochloric acid solutions were freed from iron by double precipitation of basic ferric acetate. Ammonium uranate was then precipitated from solution in an excess of ammonium carbonate, and collected. The filtrate was evaporated to dryness and after expulsion of ammonium salts a small amount of uranium was recovered as above.

The uranyl sulfate solution resulting from the extraction of lead from about 390 g. of mineral (see preceding paper) yielded several grams of rare earth oxalates, but we were unable to convince ourselves that thorium was present in more than traces. This is in accord with the results of analyses of similar material made by the Canadian Mines Branch (see preceding paper, p. 703).

TABLE I

Sample, g.	$PbSO_4$, g.	Pb, %	U_3O_8, g.	U, %	Pb/U
2.3005	0.0845	2.505	1.3963	51.47	0.0488
1.9146	.0699	2.490	1.1587	51.32	.0485
2.2185	.0807	2.481	1.3265	50.70	.0490
Average		2.492		51.16	.0486

Baxter, Faull and Tuemmler (see preceding paper) have found the atomic weight of the lead contained in this sample of Beaverlodge pitchblende to be 206.08, indicating, in the almost complete absence of thorium, that about 7% of this lead is common lead. With the per cent. of uranium 51.16, and that of lead 2.318 (corrected for common lead) the Pb/U ratio is 0.0453. Analyses by the Canadian Mines Branch give 0.054 (see page 703 of preceding paper). Barring alteration and other unknown effects the approximate age of the mineral is 344 million years, while the logarithmic formula gives 336 million.

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