Regularities in the Spectra of Lead and Tin.

By R. V. ZUMSTEIN, M.A.

University of Toronto.

Presented by PROFESSOR E. F. BURTON, Ph.D., F.R.S.C.

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Lead and tin belong to a group in Mendeleeff's table in which series of spectral lines have not been recognised.

Kayser and Runge,[1] who made the first exact measurements on the lead arc, pointed out that a group of ten lines repeated itself three times in the spectrum with constant frequency difference. They will be denoted as Kayser and Runge's I, II, and III groups. The frequency differences are 1081·08, and 2832·0. Seven additional lines have recently been added to these groups by Saunders.[2]

On carefully examining the work of Kayser and Runge, and some unpublished researches of Fuller and Ainslie of this laboratory, it was found that a symmetrical group of three lines repeated itself five times in the spectrum. This gives five groups with constant frequency difference.

TABLE I.

SPECTRUM OF LEAD.

I	II	III	IV	V
7229·30	4057·97	3683·60	3639·71	2833·17
3220·68	2388·89	2254·02	2237·52	1904·20
3119·09	2332·97	2204·18	2187·99	1868·58

The frequency difference between:
I and II is 1081·2.
II and III is 2504·5.
III and IV is 327·3.
IV and V is 8147·1.

[1] H. Kayser, Handb. der Spect., p. 574 (1902).
[2] F. A. Saunders, Ast. Journal, 43, p. 240 (1916).