THE ROYAL SOCIETY OF CANADA

REGULARITIES IN THE SPECTRUM OF TIN.

As tin falls in the same group with lead in the periodic table we should expect similarities in their spectra, as has been often recorded. Kayser and Runge¹ found a group of thirteen lines which repeated itself with the same frequency difference, three times through the spectrum. The frequency differences were 5187.03 and 1736.73.

In the work on lead it was pointed out that a group of three lines existed which repeated itself five times with constant frequency difference. This was immediately found for tin when looked for. The five groups are:

I	11	111	IV	v
3801 • 16*	3175-12*	3009 • 24*	2863-41*	2840.06*
2785.14	2433-53*	2334-89	2246.15	2231.80
2524.05	2231-85	2148.59	2073.01	2061.00

The marked lines are absorbed in the tin-carbon arc. The line 2061.00 has not yet been observed. The frequency difference between: I and II is 5186.2 II and III is 1736.1. III and IV is 1692.4. IV and V is 288.1.

From this we see that I, II and III are included under Kayser and Runge's first three groups. This was in agreement with the work on lead which suggests a series of quintets. The flame spectrum of tin in the Mecker burner was photographed to see if the heads of the five series $3801 \cdot 16$, $3175 \cdot 12$, $3009 \cdot 24$, $2863 \cdot 41$, $2840 \cdot 06$ appeared. However, in no case was a line spectrum obtained; the band spectrum always appeared.

Only two experimenters have observed a line spectrum from the flame fed by a tin salt.

De Watteville² used the protochloride of tin, Eder and Valenta observed a few lines along with the band spectrum. The work of these two is here given.

¹ Loc. cit.

62

¹ loc.cit.