IX.—On *Mercuric Chlorothiocyanate*.

By G. C. McMURTRY, Student in the Normal Schools of Science,
South Kensington.

ON treating the residue of mercurial salts obtained by the action of thionyl chloride on mercuric thiocyanate (see preceding paper) with hot water, the clear solution deposited crystals of a compound which analysis showed to be *mercuric chlorothiocyanate*. This salt, which does not appear to have been previously prepared, may be readily obtained by treating a mixture of 5 parts of mercuric thiocyanate and 7 parts of mercuric chloride with boiling water, and allowing the clear solution to stand. The substance was analysed with the following results :—

- I. 0·4066 gram dissolved in dilute alcohol, mixed with hydrochloric acid, and treated with sulphuretted hydrogen, gave 0·3209 gram mercuric sulphide.
- II. 0·3786 gram heated with copper oxide in a vacuum gave 22·32 c.c. of a mixture of nitrogen and nitric oxide, measured dry at 14·5° and 534 mm. pressure. After absorption of the nitric oxide there remained 22·32 c.c. of nitrogen at 14·5° and 485 mm. pressure.
- III. 0·2272 gram heated with copper oxide and lead chromate gave 0·0332 gram carbon dioxide.
- IV. 0·3731 gram treated by Carius's method gave 0·3010 gram barium sulphate.

These numbers lead to results which accord with the formula $\text{Hg} \begin{smallmatrix} \text{Cl} \\ \text{CS} \end{smallmatrix}$ or $\text{HgCl}_2 \cdot \text{Hg}(\text{CSN})_2$.

	Found.	Calculated.
Mercury.....	67·99	68·12
Nitrogen.....	4·71	4·77
Carbon.....	4·46	4·09
Sulphur.....	11·08	10·90

Mercuric chlorothiocyanate is only sparingly soluble in cold water, but readily in hot water and in alcohol; it is also slightly soluble in ether. When heated on platinum foil, it intumesces in much the same way as mercuric thiocyanate. Its crystalline characters were kindly examined by Mr. Miers, who reports as follows :—

“Slender prisms having a prism angle of $71\frac{1}{4}^\circ$; one fairly perfect cleavage (c) equally inclined to two prism faces which form the acute edge of the prism, and at an angle of $42\frac{1}{4}^\circ$ to that edge; an imperfect

cleavage (γ) equally inclined to the same two prism faces, and inclined at a smaller angle to that edge in the opposite direction.

System probably monosymmetric.

$$m_1 m_2 = 71^\circ 10'.$$

$$cm_1 = 64^\circ 30'.$$

If c is the basal plane, $0P = (001)$,

and m is the prism $00P = (110)$.

Then $a : b = 2.076 : 1$.

“One optic axis is visible through a cleavage plate, and is not very far from perpendicular to c . A cross section at right angles to the prism shows only one axis. Plane of the optic axes is parallel to the plane of symmetry (010) .”