THERMAL DECOMPOSITION STUDIES OF THE METAL-CHELATES.
Thermal decomposition studies on the metal chelate-complexes.

To study the effect of heat on the metal-chelate-complexes, they were subjected to increasing temperatures in a furnace (Gallenkamp with sunvic control) starting from 100°C. The quantity of the substance taken in each case was about 100 mg. The temperature was allowed to increase by 25°C gaps and the compounds were kept at any particular temperature for a period of two hours and then after usual cooling in a desiccator, were weighed to determine the loss in weight of the sample. Heating was continued in this manner till the sample showed signs of decomposition, which was evident from an abrupt large loss in the weight. Percent weight-loss of the metal chelates of different Schiff's bases at different temperatures are shown in tabular forms in the accompanying tables (I to VII). The weight-loss percentages were plotted against temperatures in each case and the respective thermal decomposition curve was thus obtained.
Table I.
Percent weight-loss of
5-formyl-8-hydroxy quinoline-hydrazine-metal complexes.

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(*) The compound starts decomposition after this point.
FIG. 4. THERMAL DECOMPOSITION CURVES OF
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(B) URANYL-5-FORMYL-8-HYDROXY QUINOLINE - HYDRAZINE (RED)
Table II

Percent weight-loss of 5-formyl-8-hydroxy quinoline-o-phenylenediamine-metal complexes.

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(*) The compound starts decomposition after this point.
FIG. 5. THERMAL DECOMPOSITION CURVES OF
(A) NICKEL-5-FORMYL-8-HYDROXY-QUINOLINE-ORTHO-PHENYLENE DIAMINE
(B) COPPER-5-FORMYL-8-HYDROXY-QUINOLINE-ORTHO-PHENYLENE DIAMINE
FIG. 6 THERMAL DECOMPOSITION CURVES OF
(A) MANGANESE-5-FORMYL-8-HYDROXY-QUINOLINE-ORTHO-PHENYLENE DIAMINE
(B) COBALT-5-FORMYL-8-HYDROXY-QUINOLINE-ORTHO-PHENYLENE DIAMINE
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(*) The compound starts decomposition after this point.
FIG.11 THERMAL DECOMPOSITION CURVES OF
(A) CADMIUM-5-FORMYL-8-HYDROXY-QUINOLINE-PARA-PHENYLENE DIAMINE
(B) ZINC-5-FORMYL-8-HYDROXYQUINOLINE-PARA-PHENYLENE DIAMINE
Table IV.
Percent weight-loss of 5-formyl-8-hydroxy quinoline-oxal-hydrazimidine-metal complexes.

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(*) The compound starts decomposition after this point.
FIG. 13. THERMAL DECOMPOSITION CURVES OF
(A) COPPER-5-FORMYL-8-HYDROXYQUINOLINE -OXAL-HYDRAZIMIDINE
(B) NICKEL-5-FORMYL-8-HYDROXYQUINOLINE -OXAL- HYDRAZIMIDINE
FIG. 14 THERMAL DECOMPOSITION CURVES OF
(A) COBALT-5-FORMYL-8-HYDROXYQUINOLINE-OXAL-HYDRAZIMIDINE
(B) MANGANESE-5-FORMYL-8-HYDROXYQUINOLINE-OXAL-HYDRAZIMIDINE
FIG. 15. THERMAL DECOMPOSITION CURVES OF 
(A) ZINC-5-FORMYL-8-HYDROXYQUINOLINE-OXAL-HYDRAZIMIDINE
(B) CADMIUM-5-FORMYL-8-HYDROXYQUINOLINE-OXAL-HYDRAZIMIDINE
Table V.
Percent weight-loss of
5-formyl-8-hydroxy quinoline-ethylenediamine-metal complexes.

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FIG. 17 THERMAL DECOMPOSITION CURVES OF 
(A) COPPER - 5- FORMYL - 8-HYDROXYQUINOLINE - ETHYLENE DIAMINE 
(B) NICKEL - 5- FORMYL - 8-HYDROXYQUINOLINE - ETHYLENE DIAMINE
FIG. 20. THERMAL DECOMPOSITION CURVE OF URANYL-5-FORMYL-8-HYDROXY-QUINOLINE ETHYLENE DIAMINE
Table VI.
Percent weight-loss of 5-formyl-8-hydroxy quinoline-benzidine-metal complexes.

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<td>88.41</td>
<td>19.20</td>
<td>68.36</td>
<td>59.68</td>
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</tbody>
</table>

(*) The compound starts decomposition after this point.
FIG. 21 THERMAL DECOMPOSITION CURVES OF
(A) COPPER-5-FORMYL-8-HYDROXY QUINOLINE - BENZIDINE
(B) NICKEL-5-FORMYL-8-HYDROXY QUINOLINE - BENZIDINE
FIG. 22 THERMAL DECOMPOSITION CURVES OF
(A) COBALT-5-FORMYL-8-HYDROXYQUINOLINE-BENZIDINE
(B) MANGANESE-5-FORMYL-8-HYDROXYQUINOLINE-BENZIDINE
Table VII.

Percent weight-loss of oxalyldihydrazide-diacetyl-metal complexes.

<table>
<thead>
<tr>
<th>Temperature in °C</th>
<th>Copper(II)</th>
<th>Nickel(II)</th>
<th>Zinc(II)</th>
<th>Cadmium(II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>10.55</td>
<td>11.05</td>
<td>9.06</td>
<td>9.50</td>
</tr>
<tr>
<td>125</td>
<td>13.05</td>
<td>12.80</td>
<td>12.25</td>
<td>10.90</td>
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<tr>
<td>150</td>
<td>18.06</td>
<td>17.31</td>
<td>12.90</td>
<td>12.88</td>
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<tr>
<td>175</td>
<td>20.50</td>
<td>22.43</td>
<td>12.95</td>
<td>14.49</td>
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<tr>
<td>200</td>
<td>25.60</td>
<td>22.93</td>
<td>13.06</td>
<td>14.85</td>
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<td>225</td>
<td>26.62</td>
<td>24.04</td>
<td>13.62</td>
<td>15.03</td>
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<td>28.23</td>
<td>25.32</td>
<td>13.73</td>
<td>15.92</td>
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<tr>
<td>275</td>
<td>31.42(*)</td>
<td>27.24(*)</td>
<td>14.15</td>
<td>18.23</td>
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<tr>
<td>300</td>
<td>57.50</td>
<td>53.50</td>
<td>15.05(*)</td>
<td>25.23(*)</td>
</tr>
<tr>
<td>325</td>
<td>-</td>
<td>-</td>
<td>42.15</td>
<td>48.62</td>
</tr>
</tbody>
</table>

(*) The compound starts decomposition after this point.