In some of the short duration, higher temperature runs with alumina liners, CrO_3 was converted to CrO_2 and recovered as small whiskers about ¼ mm long (elongated along "c") after only 1 to 2 minutes at temperatures from 1800° to 1900°C. These runs were not considered to give equilibrium results, and there was some evidence of more rapid loss of gas from Al_2O_3 cells probably due to cracking of this more brittle material or to slower densification of during heating. Longer runs at very high temperatures were avoided primarily to prolong equipment life since the results with the salt-lined cells were completely adequate to show that CrO_2 could be maintained as the stable phase to moderately high temperatures.

The results with the salt-lined cells suggest that in spite of relatively short runs a close approach to equilibrium was attained as long as the melting point of the salt was not exceeded--i.e., along the portion of the curve below about 1500°C. This conclusion has now been supported by the quite good agreement with the more extensive results of Fukunaga, (12) who indeed approached the curve from both sides of the equilibrium reaction. An extrapolation of the present data to join the curve of White and Roy (9-11) appears to be justified.

Summary

It has been shown that CrO_2 can be maintained for at least several minutes without decomposition at temperatures to above 1500°C and pressures of 60 to 65 kb. The CrO_2-Cr_2O_3 decomposition curve as determined in NaCl-lined cells in the belt apparatus intersects the melting curve for salt at about 1500°C, and gas is released rapidly from the cell. These results have been