

UNIVERSITY OF MICHIGAN

Chemical Equilibrium

- 1)  $CO_2 + H_2 \rightleftharpoons CO + H_2O$
- 2)  $CO_2 + H_2 \rightleftharpoons CO + H_2O$
- 3)  $CO_2 + H_2 \rightleftharpoons CO + H_2O$
- 4)  $CO_2 + H_2 \rightleftharpoons CO + H_2O$

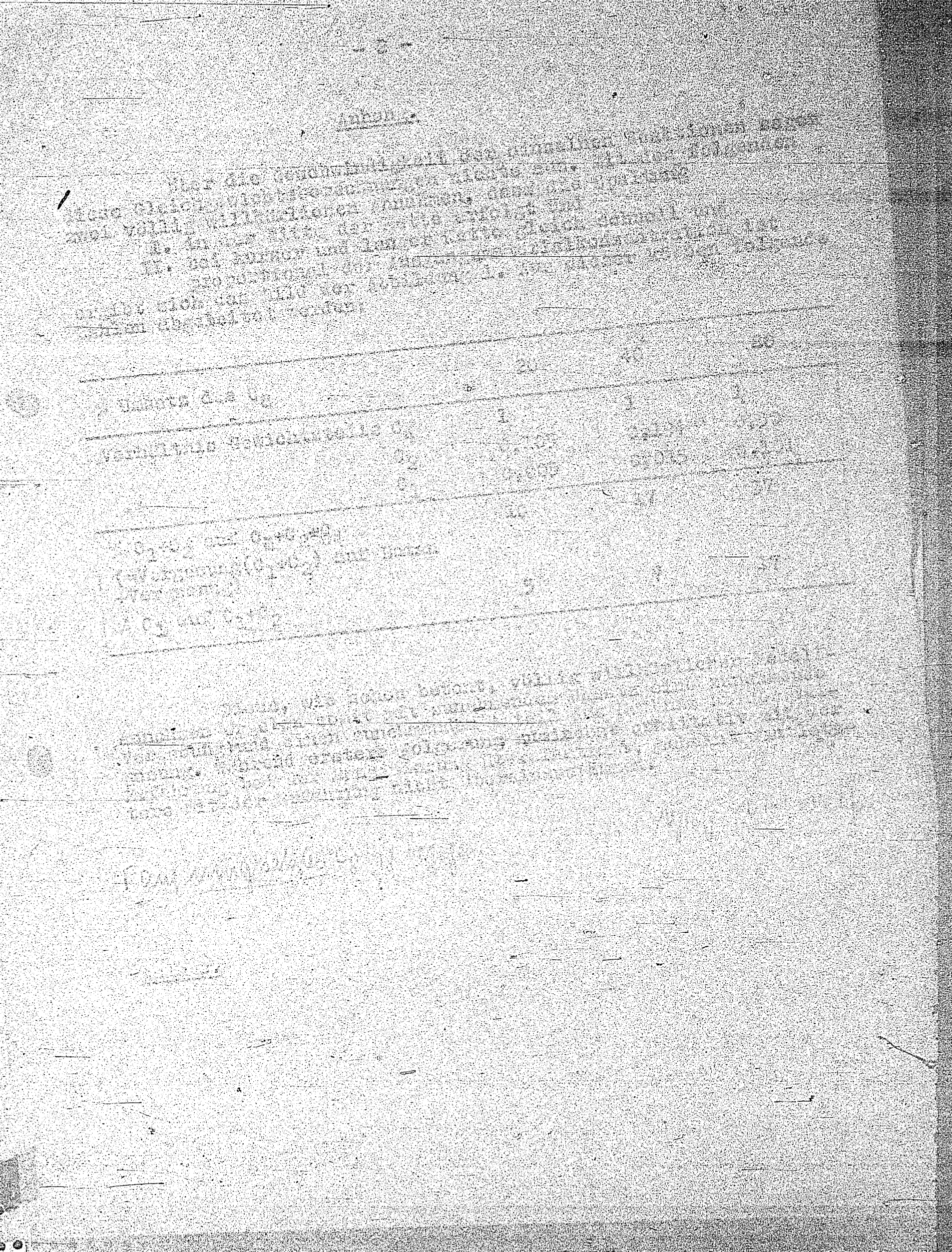
The following table shows the equilibrium constants for the reaction  $CO_2 + H_2 \rightleftharpoons CO + H_2O$  at various temperatures. The values are taken from the JANAF Thermochemical Tables.

| Temperature (K) | $K_p$ |
|-----------------|-------|
| 1000            | 0.146 |
| 1200            | 0.275 |
| 1400            | 0.475 |
| 1600            | 0.745 |
| 1800            | 1.100 |
| 2000            | 1.550 |
| 2200            | 2.100 |
| 2400            | 2.750 |
| 2600            | 3.500 |
| 2800            | 4.350 |
| 3000            | 5.300 |

For the reaction  $CO_2 + H_2 \rightleftharpoons CO + H_2O$ , the equilibrium constant  $K_p$  is given by the following equation:

$$K_p = \frac{P_{CO} \cdot P_{H_2O}}{P_{CO_2} \cdot P_{H_2}}$$

where  $P_i$  is the partial pressure of species  $i$ .





Estimated *Parasitoid* Population  
 over *Host* 1, 2, 3 and 4

