

of a mixture of carbon monoxide and hydrogen by copper, and by Markham and Benton in the adsorption of a mixture of carbon monoxide and oxygen by silica at 0° C.

It might be mentioned in this connection that Griffin¹ has shown that the presence of a small quantity of carbon monoxide on copper increases the amount of hydrogen adsorbed at low pressures and decreases it at high pressures. Markham and Benton¹ themselves have seen in the adsorption of a mixture of carbon monoxide and carbon dioxide on silica at 100° C. that the amounts of carbon monoxide adsorbed at high partial pressures of carbon dioxide are greater than the amounts adsorbed in its absence and *vice versa*. Further, Lambert and Heaven¹ have found that oxygen and argon mutually increase each other's adsorption on silica gel at 0° C.

Fuller details of the observations reported here will soon be published elsewhere. The investigation is being continued with other gases and catalysts of technical importance.

J. C. GHOSH.
M. V. C. SASTRI
K. A. KINI.

General Chemistry Section,
Dept. of Pure & Applied Chemistry,
Indian Institute of Science,
Bangalore,
October 15, 1946.

1. *J. Amer. Chem. Soc.*, 1931, **53**, 497. 2. *J. Chem. Soc.*, 1924, **125**, 685. 3. *J. Amer. Chem. Soc.*, 1927, **49**, 2136. 4. *Proc. Roy. Soc. A.*, 1936, **153**, 584.

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE ON FISCHER-TROPSCH CATALYSTS : PART II.

THE rate of adsorption of hydrogen and carbon monoxide was studied on the catalyst containing 34.2 per cent. cobalt, 4.084 per cent copper, 2.33 per cent. ThO₂, and 0.2369 per cent. Ce₂O₃. It was found that the Langmuir equation¹ did not hold. This is to be expected because the Langmuir equation is valid only for adsorption on a uniform surface. The

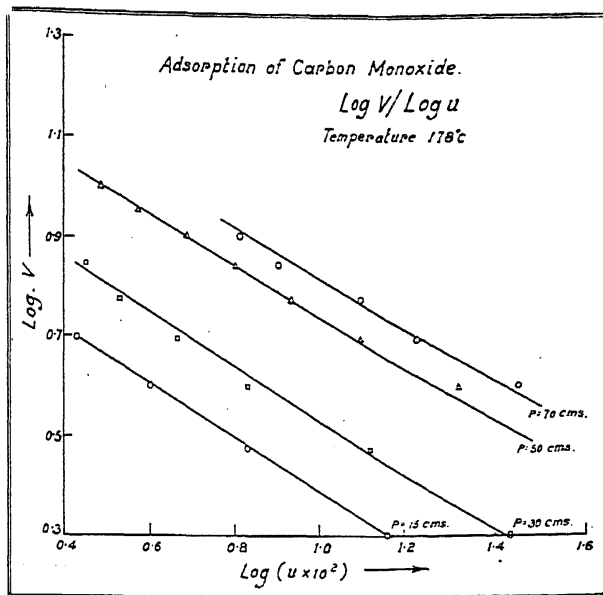
Bangham and Sever formula,² $\log \frac{\sigma}{\sigma - s} = kt^{1/m}$

where σ = saturation value of adsorption s = adsorption at any time t , and k and m are constants, required very high values for σ to

give straight lines when $\log \left(\log \frac{\sigma}{\sigma - s} \right)$ was

plotted against $\log t$. On the other hand, it was found that the logarithms of the values for the rate of adsorption at constant pressure, when plotted against the logarithms of the corresponding volumes adsorbed, gave straight lines, which for different pressures and a particular temperature were all parallel as could

be seen from the graph shown in Fig. 1 for carbon monoxide at 178° C. Similar graphs were obtained at other temperatures and also for hydrogen.



The results of the present investigation suggest the following empirical relationship between the rate of adsorption, the pressure and the amount of adsorption,

$$u = k \frac{P}{V^n}$$

where u = rate of adsorption in c.c./min., P = pressure and V = volume adsorbed, n and k are constants.

J. C. GHOSH.
M. V. C. SASTRI.
K. A. KINI.

General Chemistry Section,
Dept. of Pure & Applied Chemistry,
Indian Institute of Science,
Bangalore,
October 15, 1946.

1. *J. Amer. Chem. Soc.*, 1918, **40**, 1361. 2. *Phil. Mag.*, 1925, **49**, 935.

INFLUENCE OF CARCINOGENS ON YEAST

SEVERAL polyploidogenic organic compounds, e.g., camphor, colchicine, acenaphthene and other related derivatives, have been employed to produce cells with chromosome complements several times higher than the normal. Treatment with camphor, after the first dosage has been found to induce in the cells of *Saccharomyces cerevisiae*, a strain of brewery yeast, an increase in their volume to about twice that of the normal; a second treatment was found to result in a supergigas race with thrice the volume of the normal.¹

The present work has been undertaken to determine the effect of a few of the available carcinogens, fluorene, fluoranthene, retene and chrysene, on a strain of industrially important distillery yeast (N.C.T.C. 3019). Alcoholic solutions of these compounds (5 mg./ml.) were employed; in the case of the sparingly soluble chrysene, the solution attained saturation since