$1/t$ (q = reacting area) at different temperatures are collected in Table II.

These data could be plotted according to the Arrhenius equation, from which an activation energy of 50 kcal./mole was derived.

On the basis of these results it can be concluded that in the present case the solid state reaction between magnesium and chromium oxides occurred only at the contact area between the two specimens and not by means of material transport through the gas phase and that the rate of the process is determined by *the diffusion of chromium oxide particles through the spinel layer*. The nature of the diffusing particles however cannot be ascertained from the present data.

FRICK CHEMICAL LABORATORY
PRINCETON, NEW JERSEY

The System Water–Dioxane–Hydrogen Chloride

BY R. A. ROBINSON

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In a recent note Grubb and Osthoff[1] published a study of the separation of water–dioxane mixtures at 25° into two layers on the addition of hydrogen chloride. They stated that this behavior had not been reported previously. It was, however, given brief mention in a review article 14 years ago[2] and has since[3] been studied quantitatively.

Figure 1a shows the tie-lines and the area corresponding to two-phase systems as determined by direct analysis of the conjugate solutions.[3] The points correspond to the data of Grubb and Osthoff.[1] (A few points on the lower right-hand side have been omitted to avoid over-crowding the graph.) In general the agreement between the two determinations is good; Grubb and Osthoff find that the region of partial miscibility is somewhat more extensive in the region of the water-rich mixtures but, considering the analytical difficulties inherent in this investigation, I think the agreement is satisfactory.

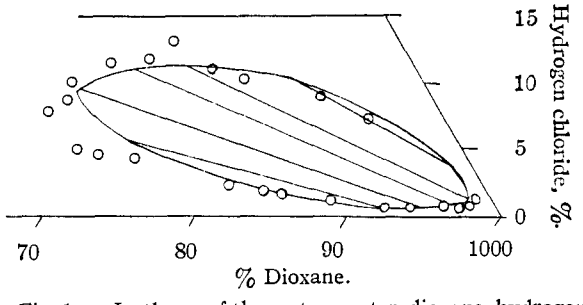

Fig. 1a.—Isotherm of the system water–dioxane–hydrogen chloride at 25°: O, data of Grubb and Osthoff; tie-lines from data of Robinson and Selkirk.

Some time ago, I made a few measurements on this system at 10° by the method I had used earlier at 25° and obtained the results given in Table I and Fig. 1b.

(1) W. T. Grubb and R. C. Osthoff, THIS JOURNAL, **74**, 2108 (1952).
(2) H. S. Harned, *J. Franklin Institute*, **225**, 623 (1938).
(3) R. A. Robinson and R. C. Selkirk, *J. Chem. Soc.*, 1460 (1948).

TABLE I

Upper layer			Lower layer		
HCl, %	H_2O, %	$C_4H_8O_2$, %	HCl, %	H_2O, %	$C_4H_8O_2$, %
4.68	3.8	91.5	9.56	9.6	80.8
2.84	2.5	94.7	10.02	14.5	75.5
1.49	1.4	97.1	9.50	18.0	72.5
0.76	2.0	97.2	8.33	21.8	69.9
.51	4.2	95.3	6.98	23.5	69.5
.57	5.6	93.8	5.03	23.8	71.2
.96	10.9	88.1	3.16	19.6	77.2

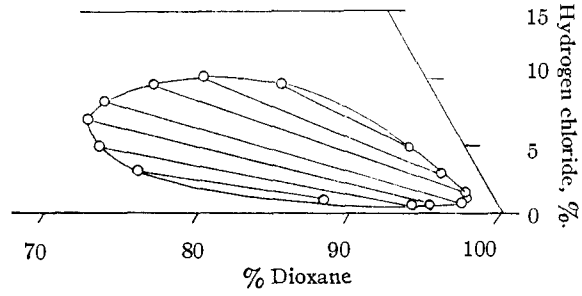

Fig. 1b.—Isotherm of the system water–dioxane–hydrogen chloride at 10°: O—O, tie-lines and composition of conjugate solution; present work.

Lowering the temperature by 15° causes the major axis of the (very approximately) elliptical curve to swing slightly in a counter-clockwise direction with, however, little change in composition of the conjugate solutions.

I have to thank Mr. Andrew Yeo Boon Hin and Mr. Oh Bak Kim for making some preliminary measurements on this system.

UNIVERSITY OF MALAYA
SINGAPORE

Potential Antivirals. I. Simple Analogs of Chloramphenicol (Chloromycetin)

BY ARTHUR P. PHILLIPS

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The simple chemical structure[1] and broad antibiotic spectrum[2] of chloramphenicol have made it an interesting model for other possible chemotherapeutic agents. While a variety of new synthetic and biologically produced drugs have become available in recent years for combating effectively many of the more common diseases of bacterial or protozoal origin, few if any of these are useful in the treatment of the important diseases attributed to a virus cause. Since chloramphenicol is somewhat effective against certain organisms believed to be viruses it seemed worthwhile to seek additional chemotherapeutic substances against important virus infections among various analogs of this useful antibiotic.

Two chemical units, the aromatic nitro and the dichloroacetyl, had been identified[1] as part of the chloramphenicol structure although these groupings had not been previously recognized in natural products, nor had they been thought desirable for incorporation into synthetic drugs. These two

(1) M. C. Rebstock, *et al.*, THIS JOURNAL, **71**, 2458 (1949).
(2) I. W. McLean, Jr., *et al.*, *J. Clin. Investigation*, **28**, 953 (1949).