neodymium, samples of pure neodymium oxide and gadolinium oxide. These were chosen because of their known paramagnetic properties and give very rapid conversions of the hydrogen at high space velocities. Zinc oxide, lanthanum oxide and vanadium pentoxide possessing low or negligible paramagnetism show low or negligible conversion efficiencies even with marked van der Waals adsorption at liquid air temperatures. The paramagnetic lower oxide of vanadium shows rapid conversions. The magnetic characteristics of the surface appear, therefore, to be a controlling factor. The magnetic properties may possibly account for our earlier positive results with metallic nickel and for the recent results of Harkness and Emmett (Washington Meeting, A. C. S., March, 1933) with van der Waals adsorption on iron synthetic ammonia catalysts. We understand that L. Farkas and H. Sachsse have similarly found that paramagnetic substances such as oxygen, nitric oxide, nitrogen dioxide and paramagnetic salt solutions effect the para–ortho conversion in homogeneous systems. We are extending our heterogeneous studies to obtain quantitative data on the relation between magnetic moment and surface efficiency.

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MAGNETO-OPTIC MINIMA OF ORGANIC COMPOUNDS

Sir:

We present below a table and graphs of readings of the minima obtained on the magneto-optic method of Allison with aqueous and ethereal solutions of four homologous series of organic compounds, namely, the normal, primary, aliphatic alcohols; the lower, normal, fatty acids; the alkyl acetates and the alkyl bromides. The concentrations in all cases were 1×10^{-8} by volume. Readings agreed to within one or two mm. and were the same within this limit irrespective of the solvent. Blanks were

MAGNETO-OPTIC MINIMA OF ORGANIC COMPOUNDS

	Alcohols	Acetates	Bromides	Acids		
				12.08	12.26	Formic
Methyl	5.56	12.00	13.89	11.80	11.88	Acetic
Ethyl	5.80	12.50	14.44	11.60	11.71	Propionic
Propyl	5.98	12.97	15.04	11.20	11.32	Butyric
Butyl	6.30		15.68	10.91	11.00	Valeric
Amyl	6.65	13.60	16.36	9.72	9.80	Caproic
Hexyl	7.02		17.16	7.72	7.88	Heptylic
Heptyl	7.37	14.11	18.10	4.90	5.02	Caprylic
Octyl	7.65		19.00	2.68	2.80	Nonylic
Nonyl	8.03			0.25	0.38	Capric

run first in every case but no other minima were found in the region near those recorded which were not observed with the blanks.

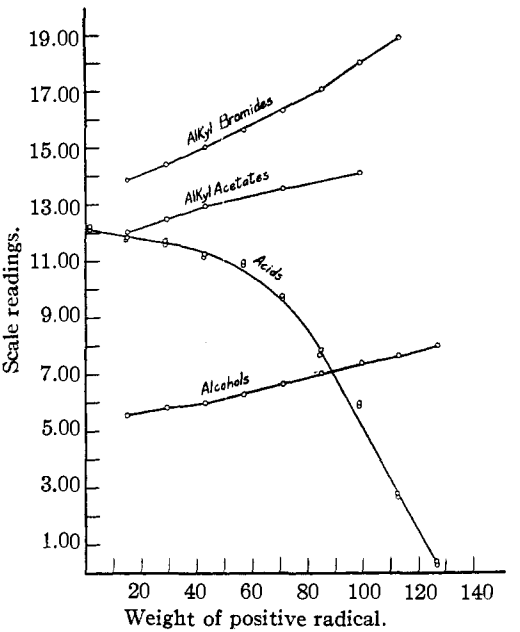

Fig. 1.—Scale readings of various organic compounds on the Allison magneto-optic apparatus.

It will be seen that in each homologous series scale readings for the minima increase with increasing weight of alkyl radical where the radicals are positive, and decrease where they are negative (acids). This is in general agreement with the results of Allison on inorganic compounds [THIS JOURNAL, **52**, 3796 (1930); *J. Chem. Ed.*, **10**, Feb. (1933)].

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THE TEMPERATURE COEFFICIENT OF THE RECOMBINATION OF HYDROGEN ATOMS

Sir:

A study of the recombination of hydrogen atoms at 25° [I. Amdur with A. L. Robinson, THIS JOURNAL, **55**, 1395 (1933)] indicated that the most probable mechanism for the trimolecular gas reaction is the union of two hydrogen atoms with either a third hydrogen atom or a hydrogen molecule acting as the third body. Assuming no wall reaction the calculated reaction velocity constants showed a definite drift toward lower values at