This equation was found to hold within the limits of experimental error for solutions of the alkali (without lithium) and alkaline earth halides to a concentration at least as high as 10 *N;* and for sulfuric acid to a concentration of about 25 *N* (75 wt. %) where there was a point of inflection. The constants c_1 and c_2 were found to be additive.

DEPARTMENT OF CHEMISTRY
HARVARD UNIVERSITY
CAMBRIDGE, MASSACHUSETTS
WILLIAM C. ROOT

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THE SPECIFIC SURFACE AND THE ADSORBENT PROPERTIES OF LEAD SULFATE

Sir:

1. In agreement with the results of F. Paneth and W. Vorwerk [*Z. physik. Chem.*, **101,** 445, 480 (1922)], it was found that the specific surface of lead sulfate was the same in suspensions in water as in the presence of an excess of lead nitrate. P. and V. derived an equation from which may be inferred that in the suspension of lead sulfate in water about 40% of the surface of the solid was covered with adsorbed lead ions, whereas the surface was covered with a monatomic layer of lead ions in a solution of 0.005 molar lead nitrate. We determined also the specific surface of lead sulfate in dilute solutions of sodium sulfate and found the same value as before. This constancy of the specific surface indicates that lead sulfate adsorbs neither lead ions from dilute lead nitrate solutions nor sulfate from dilute sodium sulfate solutions. This conclusion was supported by the determination of the adsorption of the two salts according to chemical methods. Considering that we worked with coarsely crystalline precipitates of lead sulfate (of the same size as those of P. and V.) it is quite possible that an adsorption takes place at the corners and the edges. If the latter would have been completely covered with adsorbed lead or sulfate ions, the adsorption would amount to less than 0.1% of the total surface of the coarse crystals, which is beyond detection by the experimental methods used.

2. The adsorption of the sodium salt of Ponceau 4R by lead sulfate was determined under various conditions. It was found that only dye ions were adsorbed, no sodium ions being removed from the solution. This means that we are dealing here with an exchange adsorption, sulfate ions being replaced by ponceau ions in the surface. Experiments are being carried out in this Laboratory with various ionic precipitates showing that the exchange adsorption occurs quite generally.

A detailed account of all the work will soon be presented for publication.

SCHOOL OF CHEMISTRY
UNIVERSITY OF MINNESOTA
MINNEAPOLIS, MINNESOTA
I. M. KOLTHOFF
CHARLES ROSENBLUM

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