

It should be emphasized that these effects are produced by audible sound, the frequencies (1000–15,000) being of a far different order than any hitherto reported as influencing chemical reactions. Because of the relative ease of producing high energy densities in this range, it seems likely that such methods will prove to be useful.

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#### THE FORMULAS OF ANTIMONIC ACID AND THE ANTIMONATES

*Sir:*

In my recent discussion of antimonic acid [THIS JOURNAL, 55, 1895 (1933)] I stated that its formula had not been previously recognized to be  $\text{HSb}(\text{OH})_6$ . I have just learned that this statement is incorrect, for in 1929 Professor L. P. Hammett, in an interesting discussion of amphoteric hydroxides ["Solutions of Electrolytes," McGraw-Hill Book Co., New York, 1929, p. 108], wrote: ". . . the sodium antimonate whose crystallization is used as a test for sodium has exactly the right content of water so that it can be written  $\text{NaSb}(\text{OH})_6$ ."

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#### EXPERIMENTAL EVIDENCE FOR ACTIVATED ADSORPTION OF HYDROGEN BY CHARCOAL

*Sir:*

It was shown recently by Kingman [*Trans. Faraday Soc.*, 28, 269 (1932)] and by Burstein and Frumkin [*ibid.*, 28, 273 (1932)] that hydrogen is slowly sorbed by charcoal at higher temperatures (above  $100^\circ$ ), whereas at room temperature only van der Waals adsorption is observed. The experiments described below give in our opinion a direct proof that hydrogen sorbed at higher temperatures remains on the charcoal surface and is not dissolved in the interior of the solid, as it was suggested for similar cases by Steacie and Ward.

Burstein and Frumkin [*Z. physik. Chem.*, 141, 158 (1929)] found that charcoal heated in hydrogen to  $1000^\circ$  and cooled to room temperature adsorbs small quantities of alkali from an aqueous solution if protected from contact with oxygen. The mechanism of this process consists in an ionization of the hydrogen, the negative charge of the charcoal surface attracting the cations of the solution.

In connection with the problem of activated adsorption, it appeared