In order to obtain the maximum deflection, pole pieces 10 cm. long were used to produce the inhomogeneous field. The beam was formed by slits of about 0.02 mm. width and was condensed upon a surface cooled with liquid air under reduced pressure. The image was photographed *in vacuo*. The image formed was about 0.2 mm. wide and under the most favorable conditions a broadening of the image of about 0.01 mm. was to be expected when the field was on. This effect should be easily measurable. The experiments failed because of the lack of sharpness of definition of the edges of the image. This lack of sharpness is partially the result of the long path of the beam. It was not possible to obtain images whose widths could be measured with certainty to 0.01 mm. and it is not certain that any deflection has been observed.

CHEMICAL LABORATORY
UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS

W. H. RODEBUSH
W. A. NICHOLS, JR.

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CATALYSIS BY SODIUM CHLORIDE OF OXIDATION OF CARBON

Sir:

The catalytic action of salt in the oxidation of carbon, long familiar to the householder as a means of freeing chimneys of soot, may readily be demonstrated in the laboratory. If a glass tube or rod is held just above a flame which surrounds a wad of asbestos impregnated with sodium chloride, the latter volatilizes and deposits on the glass. A faint veiling is all that is necessary. An alternative method of applying the salt is to wipe a solution of it over the glass and let the water evaporate. Next, the glass is covered with soot by means of a smoky flame, over both the bare glass and that portion coated with sodium chloride, and is permitted to cool to give uniform temperature in the subsequent heating. If the tube or rod so prepared is then slowly heated, as uniformly as possible, it will be noted that the deposit of soot burns off first from the section where the sodium chloride is, leaving a very sharp dividing line between the treated and untreated glass surfaces.

A similar effect is observed if an effort is made to cover with soot a hot piece of glass, a portion of which has been treated with sodium chloride. Depending on the temperature, the soot will either fail to deposit at all on the treated surface, or will burn off rapidly when the smoky flame is removed, while the untreated glass becomes and remains covered.

An effort was made to follow the reaction quantitatively, using sugar charcoal heated to a definite temperature in a current of carbon dioxide-free air, determining the rate of formation of carbon dioxide by absorption in standard barium hydroxide solution. It was found that the uncatalyzed oxidation proceeded at an appreciable rate even at a tempera-

ture as low as 200°, and that the reaction was accelerated by the presence of sodium chloride; consistent rates, however, could not be obtained, since the reaction became slower and slower as time went on, presumably because of the more rapid oxidation at first of the smaller particles or more active patches on the carbon surface.

CHEMICAL LABORATORY
JOHNS HOPKINS UNIVERSITY
BALTIMORE, MARYLAND
ROGER K. TAYLOR

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THE DECOMPOSITION OF HYDROCARBONS IN THE ELECTRODELESS DISCHARGE

Sir:

In the light of the recent note of Harkins and Gans [THIS JOURNAL, **52,** 2578 (1930)] on the decomposition of benzene in the electrodeless discharge, the following observations may be of interest. In 1927 and 1928 the author, while at Yale University, collaborated with Dr. I. A. Black in a study of the spectra of some simple hydrocarbons. Several means of excitation were used in determining the most satisfactory method for producing a spectrum of the unaltered molecule; these methods are

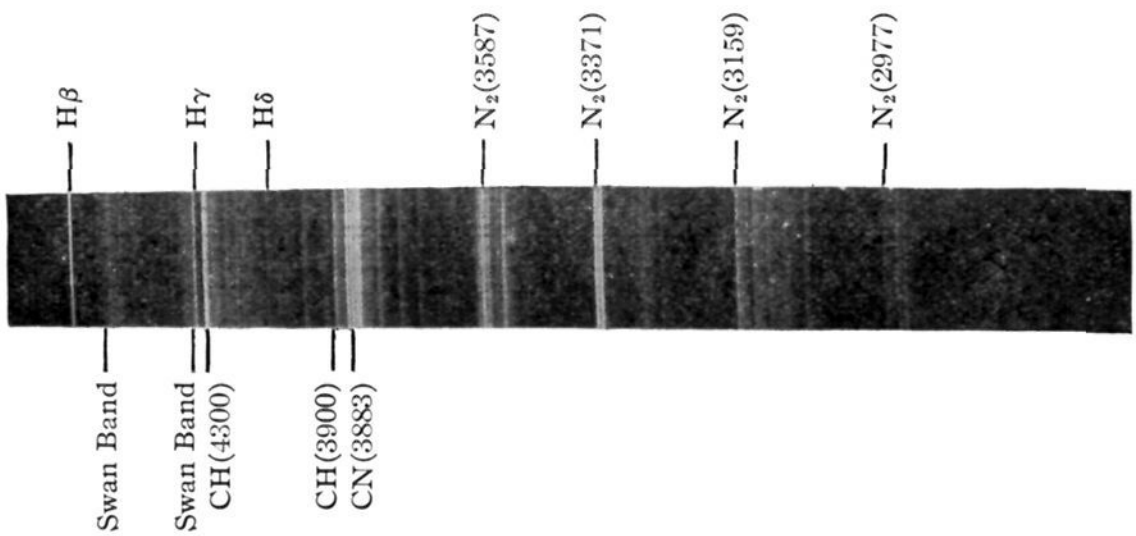

Fig. 1.—Spectrum of the decomposition products obtained from pentane in the electrodeless discharge.

described in our paper on the spectrum of benzene [*Phys. Rev.*, **35,** 452 (1930)]. Trial exposures using the electrodeless discharge were made on a number of substances including benzene, pentane, 2,2,4-trimethylpentane, acetylene, chlorobenzene and cyclohexane before the method was discarded because of the excessive decomposition it caused.

Our photographs of benzene show complete agreement with the observations of Harkins and Gans. Three lines of the Balmer series of hydrogen, the Swan bands, as well as the CH bands at λ 4300 and λ 3900,