

COMMUNICATIONS TO THE EDITOR
THE "STAR TRAIL" METHOD FOR THE SPECTROGRAPHIC
QUANTITATIVE DETERMINATION OF THE ELEMENTS

Sir:

Diligent search of the voluminous literature has failed to disclose the "Star Trail" method for the spectrographic quantitative determination of the elements as described below. A bright line is isolated from a spectrum by interposing a slotted light stop between the refracting element and the telescope of a spectroscope. The image of the line so isolated falls upon a film affixed to a rapidly rotating drum which spreads out this line into a band. The rotation serves to equalize any flickering due to any cause and to render the band of uniform density, which depends upon the concentration of the given element in the solution employed and upon the time during which the film is exposed to the light. The drum carrying the film can be racked up or down so as to expose different parts of the film, as desired.

Spectra due to different concentrations of the same element, employed as standards, are exposed in a series with the unknown concentration on the same film as a succession of bands, keeping time of exposure and speed of rotation of the film as constants. The bands of different density can be compared directly by cutting the film across all the bands and bringing the latter into direct alignment. Density can also be controlled by the manner of developing the film.

Experiments with sodium chloride in concentrations varying between 0.500 and 0.0250% and exposure of five minutes to a portrait panchromatic film gave satisfactory indications of the value of the method.

Work is now proceeding at the University of Illinois with special reference to the application of the method to the quantitative analysis of the alkali metals.

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THE PARACHORS OF TWO ISOMERIC CHLORODINITROBENZENES

Sir:

In a recent communication¹ Sickman and Menzies reported the results of a determination of the parachor of 1-chloro-3,4-dinitrobenzene from surface tension measurements at 40 to 60°. This was found to be approximately the same, allowing for "drift of parachor with temperature," as that evaluated from Jaeger's measurements² of the surface tension of the

¹ Sickman and Menzies, *THIS JOURNAL*, **52**, 3327 (1930).

² Jaeger, *Z. anorg. allgem. Chem.*, **101**, 117 (1917).