concentration is taken as that which produces a signal equal to twice the random background fluctuations.) Between the extremes of these two compounds fall most organic compounds which contain a functional grouping.

The instrument is completely insensitive to changes in rate of flow of carrier-gas up to 500 cm.³/min. (the highest studied) and to pressure changes up to 10 cm. of mercury in the case of nitrogen. With the twin-chamber detector cell described, long-term drift (after a warming-up period of 30 min.) is absent at the sensitivity ($R_s = 10,000$ ohms) which results in full-scale deflexion for 1 mgm. of acetone per cm.³. The intrinsic response speed of the apparatus (meter excepted) is determined by the V_1 anode lead filter time constant (here 500 μ sec).

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Relative Instability of Chlorpromazine in *N* Alkali

IN the course of study of the factors responsible for the low recoveries of chlorpromazine from brain tissue, it was observed that *N* sodium hydroxide, which is commonly used in the extraction procedure^{1,2}, caused singular changes which could be followed spectrophotometrically. Readings at 2550 Å., an absorption peak characteristic of chlorpromazine, steadily decreased with time, accompanied by immediate increased readings at 2750 Å., which is characteristic of the sulphoxide³. These latter readings reached a maximum within 10–15 min., and began to decrease progressively, indicating further changes in the molecule (Fig. 1). No such changes were evidenced in 0.05 *N* sodium hydroxide (final concentration).

The inability to detect chlorpromazine sulphoxide in the reaction mixture chromatographically, in addition to the relative stability of this substance in *N* sodium hydroxide (Fig. 1), eliminates the sulphoxide as taking part in the series of chemical changes. It is conceivable that a reduced thionol derivative is

formed, for these compounds also are known to have a maximum absorption in the neighbourhood of 2750 Å. The ease with which this transformation occurs is of interest in connexion with the metabolism of the drug.

Whereas the decomposition of chlorpromazine in *N* alkali cannot account quantitatively for the poor recoveries from brain, it does point to the need for better control of pH when the extraction is made into organic solvents. We have used pH 10.0 with satisfactory results.

Furthermore, these studies also suggest that the comparative stabilities of chlorpromazine and its sulphoxide in *N* sodium hydroxide may be used as a means of differentiating the two substances.

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Action and Emission Spectra of the Luminescence of Green Plant Materials

A STUDY of the spectral characteristics of the delayed light emission of green plant materials has been undertaken. The apparatus used was identical to that reported earlier¹ except that a longer time constant (0.1 sec.) for the photomultiplier amplifier circuit was used in order to integrate noise and to permit operation at a higher gain. For the measurement of the action spectra, a Bausch and Lomb 500 mm. focal length grating monochromator (No. 33–86–45) was placed between the exciting light (General Electric FT–503 flashtube) and the sample. The emission spectra were measured by placing the monochromator between the sample and the detector (Dumont K–1292 photomultiplier). The intensity of the emitted light, approximately 0.2 sec. after excitation by the flash, was measured at 10 m μ intervals of either exciting light (action spectra) or emitted light (emission spectra). Two curves were drawn through two sets of alternating points taken 20 m μ apart. The final curve was drawn between the two curves obtained in this way. The slit width of the monochromator corresponded to a band pass of about 20 m μ . A correction for the relative number of quanta in each wave-length of exciting light was applied in the action spectra measurements and the emission spectra were corrected for the sensitivity of the photomultiplier at the various wave-lengths from data supplied by the manufacturer of each of these instruments. All curves, except where otherwise stated, were measured using very thin films of material.

Fig. 1. Stability in *N* sodium hydroxide of chlorpromazine sulphoxide at: (1), 2550 Å.; (2), 2750 Å.; and of chlorpromazine at: (3), 2550 Å.; (4), 2750 Å.