LETTERS TO THE EDITOR

The Specific Rotation of Emetine Hydrochloride

SIR,—The following observations, which seem of sufficient interest to record, were made when we were asked to examine a sample of emetine hydrochloride according to the standard of the French Codex (6th edition, 1937).

Emetine hydrochloride of the French Codex is required to have a specific rotation of $+53°$ when determined on a 2 per cent. solution of the anhydrous salt in chloroform but, under these conditions and using chloroform B.P. as solvent, our specimen had $[\alpha]_D^{20°C.} + 47{\cdot}5°$. It is noteworthy that Carr and Pyman[1] give $+53°$ as the specific rotation for the anhydrous salt in chloroform.

As is well known, pure chloroform is unstable and for this reason it is customary to add a small percentage of alcohol as preservative; thus chloroform of the B.P. is required to contain 1 to 2 per cent. v/v. of alcohol. It occurred to us that the alcohol content of the chloroform used as solvent might influence the specific rotation of emetine hydrochloride. Accordingly, we prepared some pure chloroform, free from alcohol, and determined the specific rotations of three batches of emetine hydrochloride, dried *in vacuo* over phosphorus pentoxide for 48 hours, in this solvent. The results for $[\alpha]_D^{20°C.}$ for 2 per cent. solutions of these samples in pure chloroform were: (1) $+59.64°$, (2) $59{\cdot}98°$ and (3) $59.98°$. A sample of chloroform B.P. was then prepared by adding 1·5 per cent. v/v. of absolute alcohol to our pure chloroform and the specific rotation of anhydrous emetine hydrochloride (sample 1) determined in this solvent. The figure obtained was $-47{\cdot}3°$ (c, 2·0).

It is evident that the actual figure for the specific rotation is greatly influenced by the alcohol content of the chloroform used as solvent and, on this account, we believe that it is more reliable to carry out the determination with an aqueous solution. In our experience, emetine hydrochloride has $[\alpha]_D^{20°C.} + 17{\cdot}8°$ when determined on an accurately prepared 5 per cent. w/v. solution of the anhydrous salt in water. Indeed, we have examined hundreds of samples in aqueous solution and the specific rotations have never deviated from $+17{\cdot}8°$ by more than a few tenths of a degree. Further evidence of the erratic results, which may be obtained when using chloroform as solvent, was afforded when we decided to repeat our work a week after the original experiments. Our pure chloroform had then become slightly acid in reaction owing to decomposition. The specific rotation of anhydrous emetine hydrochloride in this solvent was $+72{\cdot}86°$, but after purification of the chloroform a figure of $+59{\cdot}81°$ was obtained.

The Wellcome Chemical Works, Dartford. A. E. BEESLEY.
January 27, 1949. G. E. FOSTER.

REFERENCE

1. Carr and Pyman, *J. chem. Soc.*, 1914, **105**, 1604.