

NOTE.

Molecular Solution Volumes of Optical Isomers. Reply to a Recent Note by William H. Banks. By T. S. PATTERSON and ALEXANDER H. LAMBERTON.

BANKS (J., 1937, 1857) offers some theoretical criticism of our paper on the molecular solution volume of optical isomers (J., 1937, 1453) and has difficulty in attaching significance to the results which we found.

We were, of course, fully aware that we were working very near the limit of experimental error, as indeed is unavoidable in the circumstances, but we are decidedly of opinion that our *practical* results fully justified any conclusions we drew, which, in fact, were very cautious, since the subject is an extremely difficult one, and it should be remembered that each series is a much more elaborate piece of work than might at first sight appear. For these reasons we quoted every experiment of the two series that we made. Nos. V and VI of the second series were the results of the first two experiments carried out by an observer hitherto inexperienced in that *particular* line (although not in related work); and they might perhaps have been

slightly affected by that inexperience. On this account we might possibly have been justified in omitting them, in which case the concordance of the others would have been decidedly greater, and indeed almost perfect.

Banks's criticism is fallacious, because he attributes a possible (but improbable) *maximum error* of a *single* observation to the *mean* value of a considerable number of observations expressly designed to reduce this error to a minimum. The mean values used by us are, we think, likely to be decidedly more accurate than any one observation. In any case it is much better practice to estimate the probable error from the experiments themselves—since this is less likely to exclude any of the factors involved, known or unknown—than from purely theoretical considerations, although we do not wish entirely to disparage the latter.

We propose to continue the investigation of the subject, when, as we had already decided, we shall try to increase the accuracy of the temperature measurements; but we must enter this immediate caveat against the validity of Banks's criticism.—ORGANIC CHEMISTRY DEPARTMENT, UNIVERSITY OF GLASGOW. [*Received, December 4th, 1937.*]
