routine assays for this purpose. Routine assays are necessarily carried out on limited numbers of animals, and even under ideal conditions, where the responses obtained are most effective for the calculations, the differences in slope which can be detected are relatively large. This may be shown by reference to the figures given in Table III, in which twelve separate determinations of the slope of the regression line for ouabain are reported. From seventy-five to one hundred and twenty frogs were used in each of the experiments and the slopes varied from 13.5 to 32.7, yet no *significant* difference could be shown in these twelve determinations. Chi-square for $b$ was determined by Bliss' equation 20*a* (7) and also for each individual test in comparison with the composite line by his equation 20 (7).

In most cases it would appear, therefore, that relatively large differences in slope cannot be shown to have significance when the determinations are carried out in routine assays using the restricted numbers of animals which can be economically employed for this purpose. The evidence in Table III indicates that changes which have occurred in the case of ouabain were not large enough to be detected. When the slopes of the digitalis curve shown in Tables I and II were compared, no significant differences could be proven by equation 20*a* (7) and only three lacked agreement with the mean when equation 20 (7) was used. What appears to be of greater importance for the purpose of routine tests is the small variation in the results of assays when computed by the two methods, Tables IV and V. It appears, therefore, that a one-dose assay based on a standard curve will give results that are quite satisfactory in testing market samples of digitalis, and the method is to be preferred from the standpoint of simplicity.

Although the extent of the variability in the sensitivity of frogs to ouabain and digitalis is not the same, from a practical standpoint either the digitalis or ouabain curve may be used, providing the mortalities fall between 25 and 75 per cent. This observation has been emphasized in a recent paper by Chapman (10).

SUMMARY

1. Data for the construction of composite dosage-response curves for digitalis (*Digitalis purpureum*) and ouabain (*Strophanthus gratus*) are presented.

2. The composite curve for digitalis (*Digitalis purpureum*) has been found to differ significantly from the composite curve for ouabain (*Strophanthus gratus*).

3. A comparison of methods shows good agreement between a three-dose method and a one-dose method of assay for digitalis.

4. The maximum errors of the one-dose methods of assay for digitalis and also for ouabain are given.

5. A one-dose method is recommended for routine assays of digitalis and strophanthus preparations.

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# Book Review

*Handbook of Chemical Microscopy.* Volume II. Chemical Methods and Inorganic Qualitative Analysis. EMILE MONNIN CHAMOT and CLYDE WALTER MASON. 2nd Edition. 438 pages. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y., 1940. Price, $5.00.

The second edition of Volume II of this handbook describes the essential manipulative methods employed in chemical microscopy and presents a compilation of the most dependable tests for the inorganic cations and anions. The references to original sources of information are unusually complete. This is believed to be the best and most complete authority in the field of microscopical qualitative analysis.—A. G. D.