

DISCUSSION

MR. T. W. LASHOF¹ (*presented in written form*).—This paper is very interesting—particularly the appendix on Herzberg's treatise. However, I was disappointed that the paper did not include some brief remarks on the history of official testing in this country: Government Printing Office, National Bureau of Standards, TAPPI, and ASTM Committee D-6. The author, Mr. Willets is a past chairman of ASTM Committee D-6 and can give us a little of the history of this committee.

The authors have rightly pointed out the importance of statistical techniques for sampling and for evaluating the data. They did not mention the statistical evaluation of the test methods themselves (round robins and the like)—perhaps because there is little or no history here.

One reason for the study of history is to glean information for the prediction of future trends. In this regard, I quote briefly from a recent ASTM BULLETIN:²

"Perhaps the target of tomorrow's standard should be an equation of state, or, perhaps, equations of state. Into an equation of this nature will go the molecular and atomic parameters of a given matter.

"The specification of tomorrow may be a very simple one by today's stand-

ards. Conceivably it could describe molecular type, size, and atomic geometry in terms of a very few numbers. . . . Because of the quantitative nature of (this) specification, reflecting the advancement of materials engineering to an exact science, standardizing bodies could act immediately. Long, frustrating, and expensive round-robin test programs would become ancient history."

Would the authors try their skill at predicting? Will round robin testing increase or decrease in the future? Will it continue to be frustrating? When will it become ancient history?

MR. W. R. WILLETS (*author*).—Round robin testing will have to exist until somebody comes up with something a lot better. It will always be frustrating. I do not think any one of us will live long enough to see it become ancient history. The old idea of running a lot of tests, or of having a lot of people run a lot of tests, and then trying to correlate the data, still holds pretty well. After all, the Salk vaccine development has been the result of a lot of round robin testing. It was shot into the arms of a lot of people, and then it was found how many did not get polio.

I am not saying you won't ever be able to develop that beautiful Einstein equation for the paper you are going to run on the press tomorrow, but I would not dare to speculate on when that might come.

¹ Physicist, Paper Section, National Bureau of Standards, Washington, D. C.

² "Tomorrow's Standards—Equation of State?" ASTM BULLETIN, No. 230, May 1958, p. 29 (TP 107).