

Overview

The First Symposium of ASTM Technical Committee E-11 on Quality and Statistics was a resounding success. Over 40 paid registrants were in Philadelphia, Pennsylvania on April 2, 1990 at ASTM headquarters. The symposium was opened by the chairman, myself, with remarks on Dr. Joseph M. Juran, a 1912 immigrant from Gurahumora, Romania. Highlights of my remarks follow:

Dr. Juran was closely associated with Harold F. Dodge, a 1920's employee of Bell Laboratories, who is the focus of our symposium. Dr. Juran's employer, Western Electric Company urged Bell Telephone Laboratories to apply statistical tools to control the quality of manufactured products. Together they included newly invented Shewhart Control Charts, sampling theory, and a demerits plan for evaluating outgoing quality.

In the late 1920's, the Joint Bell-Western Electric Committee on inspection, statistics, and economy met every few months and most fruitfully developed sampling tables. Woven into this development was the identification and terminology of sampling risks, single, double, and continuous sampling plans, the AOQL (average outgoing quality limit) concept, and the process average concept (an early version of the process capability concept).

Derivatives of these developments emerged as published sampling tables: Military Standard 105, the Dodge-Romig Tables, and many others. The Joint Committee had hardly any significant impact on the U.S. economy as a whole until the second world war when the U.S. armed forces needed sampling inspection plans.

Dr. Juran was instrumental in the pioneering of statistical sampling. Dr. Harold F. Dodge was also a great pioneer in the field. Dr. Juran, who spoke at the 44th American Quality Congress in San Francisco in May of 1990, offers these friendly words, "When I am gone, let no one weep for me. I have led a wonderful life." The chairman of this symposium hopes that all of us are able to make this statement as our lives unfold.

In memory of Dr. Harold F. Dodge, this symposium is dedicated. Dr. Dodge's graduate students and doctoral candidates gladly accepted an invitation to present their doctoral works under Dr. Dodge at this symposium. Leading the students was Dr. Edward G. Schilling of the Rochester Institute of Technology who gave an overview of "Statistical Sampling: Past, Present, and Future."

Dr. Schilling referred to sampling by attributes and the Shewhart "p" control chart letter. His historical development was exceedingly informative. The inequalities presented were interesting. His description of the type A and B sampling plan operating characteristic curves was clear. The distinction he made between probability distributions was very helpful to both the novice and experienced statistician. Reference to Dr. Edward Deming's work reinforced the

original type A and B concepts presented. Labeling of types A and B as police function and feedback system, respectively, was very enlightening to the symposium participants. His final zero defects control chart presented a great baseline for participant perspectives to work from.

Dr. Robert F. Perry of McDonnell Aircraft presented a high energy talk spiced with humor. He continually made reference to the immovable rigor of his mentor. He asked for questions during his presentation and provided meaningful feedback to the participants. He was candidly honest about the American philosophy of not desiring to reject lots. In fact, he stated that, "Industry will sample a lot until it is acceptable." Dr. Perry exhibited many figures as examples of his thesis. He shared other of his thesis ideas and brought us up-to-date on his philosophy of skip-lot sampling. The U.S.D.A. and ANSI/ASQC Standard SI examples he provided were very helpful and complex.

Dr. Joseph R. Troxell of LaSalle University described suspension systems for today's manufacturing environment. In light of the importance of continual improvement needed in America in the 1990's, his presentation was most timely and applicable. His use of simple statistical methodology, as also purported by Victor E. Kane in his new book, "Defect Prevention," in manufacturing is mandatory, and Dr. Troxell's suspension system for stop-line techniques fulfills the need.

Dr. H. Alan Lasater of Tennessee Associates International, Incorporated provided a lively description right after lunch on "The Robustness of a Class of Continuous Sampling Plans" under certain types of process models. His integration of wit into the opening and delegation of questions to Dr. Troxell was enjoyable. His absurd hypothesis was uniquely presented. The development of his work was very easy to understand. The practicality of the number of pieces produced where stability occurs was revealing.

Dr. Larry Romboski of the California University of Pennsylvania described his "Quick Switching Systems" of acceptance sampling. He opened with revelations about the simplicity of Dr. Dodge's suppositions. Dr. Romboski presented the four basic points in his outline succinctly. The points described were easy to follow. The synergy of his graphical family of curves was as catchy as his sampling plans. The explanation of the table made good sense. The QSS (quick switching system) plans discussed were concrete examples for participant use. Dr. Romboski's analogy to shopping with his wife was vivid.

Dr. Ken Stevens was the only student of Harold F. Dodge that could not be contacted to present his thesis work.

The symposium departed from Dodge's students to three other speakers invited to present the results of their work in the statistical sampling discipline.

Dr. Charles H. Proctor of the North Carolina State University presented a paper on "Sampling Terms of Reference" and advice on calling a statistician where needed. Dr. Proctor's presentation was very well outlined for ease of understanding. He described the basic concept of the frame and its variations. In addition, the practical application of his examples were a relaxing departure, for novice participants, from the rigorous theoretical detail presented in some of the earlier sessions.

Josh B. Tye of Sverdrup Technology, Incorporated answered one of the questions posed to a panel of Dodge students at mid-day. He described practical sampling plans with low consumer's risk for lots in excess of 100,000 and at levels of acceptable quality in the parts per million (PPM) range. He opened with two unwritten laws of sampling that are observed by statisticians and quality professionals often. His visuals were simple and of high clarity. Josh's illustration of minor differences in sampling plans, in portions of the operating characteristic (OC) curve at large sample sizes and PPM defectives, was revealing.

The final speaker of the day challenged our attention span and concentration. Dr. Richard A. Bilonick of the Consolidation Coal Company described Gy's particulate material sampling theory. His identification of issues related to the guidance provided by standards bodies and the standardization of unscientific methods was helpful and revealing. Gy's correlation of theoretical idea and practical data is novel and refreshing. The visuals exhibited were very complete and realistic. It was interesting to note that those who sample and classify particulates can be biasing samples even though they religiously follow approved standard methods. This is a challenge to ASTM to update our existing methods to incorporate and recognize theories such as Gy's.

In conclusion, the symposium would not have been possible without the tireless efforts of our forerunners and friends. I thank posthumously, Dr. Harold F. Dodge, for his insights and the courage to explore a new frontier and our recently deceased friend and mentor, Dick Freund, for the vision and persistence of ASTM Committee E-11's birth of this first of many Quality and Statistics Symposiums.

I thank the ASTM staff for the superbly coordinated and provided guidance, advertising, facilities, and reception. In addition, I thank Kathy Greene and Barbara Stafford for their persistence in printing this special technical publication (STP) in record time.

Most importantly, I thank all of you who participated in this historical event and purchased this STP.

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