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Introductory Remarks

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Introductory remarks

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Many of those who founded the Royal Statistical Society over 150 years ago were Fellows of the Royal Society, yet, so far as I know, this is the first occasion that the two organizations have held a joint meeting. It is particularly appropriate that the meeting is on a topic of such broad interest. As consumers we are all interested in quality; its importance for economic health is clear and, for those of us with a technical interest in the design and analysis of investigations, there are challenging problems to be studied.

Although I trust that none of us is so naïve as to think that the solution to industrial productivity and quality lies in particular techniques of statistical design and analysis, it has long been recognized that statistical methods have a major role to play.

W. S. Gosset (publishing under the enforced name of 'Student') at Guinnesses at the start of the century made fundamental advances in statistical analysis, stimulated by the need for careful interpretation of industrial data.

In the 1930s Shewhart at Bell Labs, and Dudding and Jennett at GEC in the U.K., in collaboration with Professor E. S. Pearson, made major contributions to statistical quality control. In the textile industries, L. H. C. Tippett at the Shirley Institute, and Professor H. E. Daniels, then at the Wool Industries Research Association, made important studies of complex patterns of variability; their ideas form the basis of techniques now used in fields as far apart as biometrical genetics and educational testing.

In World War II there were many developments in statistical technique on both sides of the Atlantic; in the U.K. these were especially striking and wide-ranging in the group at Ministry of Supply under the intellectual leadership of Professor G. A. Barnard.

The subsequent 20 years saw much progress, especially in experimental design associated with productivity in the process industries, the work of Professor G. E. P. Box on response surface designs and evolutionary operation being widely influential.

After that, in the U.K. at least, there was a relative decline of interest in industrial statistics for a variety of reasons. The present resurgence stems to some appreciable extent from Japan via the U.S.A. From a technical viewpoint many of the themes are traditional; for example, the emphasis on the study and control of variability was strong in the 1930s, as alluded to above.

This Discussion Meeting is an opportunity both to assess the problems of technique involved and to discuss the broader and in many ways much less accessible issues of attitude and implementation. The following issues underlie the discussion:

the need for advances in statistical technique of both design and analysis to deal with specific and difficult issues;

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the need to exploit current advanced statistical knowledge both in production and design;

the need for very wide use of simple techniques, especially graphical methods, in handling 'routine' quantitative data;

the role of simple-minded and not-so-simple-minded computer packages in these issues;

the importance of a working environment in which wide and effective collaboration is encouraged;

the general educational issues raised by these matters;

the educational issues within firms;

the broad managerial approaches needed for effective achievement of quality and productivity;

the implications for public service organizations.

These matters are arranged in an order of broadly decreasing specialist interest to the statistician and of broadly increasing difficulty. The organizers of this Discussion Meeting have deliberately chosen to emphasize the rather more general issues involved.

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