*H. M. Glass*[1]

# General Discussion of Papers

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**Paper: Metrication in the United Kingdom—The Industrial Bonus, by G. B. R. Feilden (presented by J. F. Barnes)**

I would like to add something to what Mr. Barnes has said in his able presentation of Dr. Feilden's paper.

First let me say that there is a reference in Dr. Feilden's paper to the difference of opinion between those sectors of British industry that wish to use the pascal as the unit of pressure and those wishing to use the bar. Although increasing attention is being paid to the pascal, it would be wrong of me not to mention that the bar has many strong and important adherents, and there is evidence that in many fields the bar will continue in use for a considerable time. What I find interesting at this symposium is the expression of wide industrial support in the United States for SI units and the wish to have as little as possible to do with units not favored by the CGPM. I feel sure that a continuing development on these lines in United States will have a considerable influence on practice in the United Kingdom.

Another point to be made is that the industrial bonus is not an automatic outcome of changing to SI. A deliberate effort must be made at the time of metricating standards to examine all possibilities for rationalization so that the uncritical accretions of years within the ranges and variants of raw materials and components are analyzed and simplified. This means that in metricating, work on standards must come first, at a sufficient time in advance of the actual metrication of industrial production to allow a considered look at what exists, followed by a "spring-cleaning" exercise.

Added to all this, what needs emphasis is that legislation involving units must be changed as soon as possible, otherwise legislative barriers will arrest the metrication process. As much as anywhere, metrication in the market place is slowed down unless legislation is altered to incorporate SI wherever units are involved. The market place aspect is a political

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hot-potato, and a government will tackle this only when its position is electorally strong.

If there is a mistake in the British process of metrication, it is that metrication for the citizen was not phased in at an earlier stage.

**Paper: The Fastener Success Story, by R. B. Belford**

Mr. Belford claims that the Industrial Fastener Institute's new metric fastener is technically superior to the ISO metric fastener. Assuming that other countries accept this and agree to change to it, inevitably the United States as the innovator will be ahead in producing the new fastener. In this case, during the transition period of world change to the new metric fastener, which Mr. Belford says is safely interchangeable with the ISO metric fastener, does he consider that products imported into the United States that are assembled using ISO metric fasteners will be allowed to enter freely?

**Paper: Metrication at Vauxhall Motors Ltd, England, by A. F. King**

In furtherance of what is said in Mr. King's paper, let me add that for some years the engine rating of automobiles in the United Kingdom has been stated in swept volume of the cylinders in cubic centimetres, and that many of us look forward to rating in kilowatts. Additionally, in the motorist's manual presented with each new car all quantities are stated in SI units as well as in imperial. Mention was made of the use by the Vauxhall designers of the conversion factors in BS 350, Part 1. This standard has just been reviewed with SI units given pride of place. It also contains much information on units in general. It is a valuable aid to designers and research workers, and to process controllers.

**Paper: Metric Packaging, by Ming Yu Li**

One of the spin-off benefits of metrication is the opportunity it gives for rationalization. I am not sure that the Rational Composite Metric Range for food packages suggested by Professor Ming Yu Li gets the best out of this: I consider it allows too much variety and, furthermore, places certain sizes so close together that the consumer will find it hard to differentiate one size from another without close inspection. In Britain we wish to go to a range for weighed products of 25, 50, 125, 250, (375), 500 g and 1 kg. We see an advantage in this to the consumer because the quantity contained in the package on sizes of 125 g and above will go up by about 10 percent on corresponding "pound" sizes, with a marginal saving in packaging materials and a definite one in labor cost per gram packed, and therefore a diminution in price to offset the cost of metrication.

I also wish to stress the importance of ensuring that the metrication of the legislation keeps pace with the metrication of packaging. In Britain the introduction of sugar in 1 kg packs has been held up because legislation for pre-packaged foods has not yet been changed from pound avoirdupois measure.

**Paper: A Metrication Case History at Ford, by S. E. Mallen**

Mr. Mallen's paper shows what can be done in a very large company by forward planning in metrication. I would only add that the picture of international standardization should be kept in right perspective. At the end of 1973 there were only 2500 ISO Standards, after more than 20 years work, and of these less than 1000 are specifications that place limiting values on the properties and characteristics of products. Of the 900 or so specifications not more than two-thirds are dimensional specifications. There is still a tremendous amount of work on specifications to be done by ISO, and the same goes for the International Electrotechnical Commission (IEC). Accordingly, ample opportunity exists for U.S. interests to participate actively in a *developing* system: the countries of Europe would welcome increased U.S. participation, and the sooner the better.