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Experimentally Speaking

THE PRESENT, THE PAST, THE FUTURE, AND THE JUBILEE

The Present flows on and becomes the Past. The Past will repeat itself and thus become the Future. So, if we understand the Past we hold a key to the Future. I believe I heard this bit of wisdom on a Star Trek program. But it also explains the significance of celebrating the Jubilee of strain gages, load cells and other transducers, and brittle coatings by emphasizing the PEOPLE involved – so many of whom are still alive today.

Even in Dr. J. Hans Meier's 1938 PhD dissertation he described self-temperature-compensated strain gages. Fifty years later there is a new generation of engineers who lack the understanding of the principles and limitations of these fundamental experimental methods. They have not studied the past. Sir Charles Wheatstone reported in 1843 that tensions in the wires in his circuit disturbed its balance. How many problems do we still encounter in which strains in lead wires are the real cause of our measuring system output? And have we found a way to recognize a new phenomenon when nature hands it to us? Wheatstone didn't! William Thomson, Lord Kelvin, was really investigating the effect of strain on the calibration of thermocouples when he accidentally found that the electrical resistance of his wires changed too. HE recognized what he had found! But cold-worked, strained thermocouples are still a problem today – often unrecognized and undiagnosed.

The reminiscences of the old-timers at the Jubilee Celebrations will be far from idle story-telling. Their experiences, often unpublished and unsung, will carry lessons for our future. Mistakes of the past should not be doomed to be forever repeated by new generations of insufficiently well-educated engineers.

Fifty years ago, without the glamour of computers and the sophistication of interactive, programmable data-acquisition systems, experimenters had to use their heads, and maintain a physical understanding of their structures, test specimens and measuring systems. They learned what to expect and what to suspect. They never blindly accepted the outputs of their measuring systems. Many of the original pioneers were much too busy solving problems to write neat little papers for publication so the rest of the world could use their accumulated wisdom. During the Jubilee, long-dormant solutions to problems which still plague us today, will be dusted off and, finally, disclosed. This time the pioneers don't have to write a thing! Everything will be taped and transcribed and published in a single proceedings for both the SEM and IMEKO Jubilee celebrations: **THE GOLDEN BOOK OF STRAIN GAGES AND BRITTLE COATINGS.**

Perhaps we can all learn valuable lessons during the Jubilee celebrations in Portland, Oregon with SEM in June, and in Houston, Texas with IMEKO in October! **BE THERE!!!**

Peter K. Stein
Stein Engineering Services, Inc.
Coordinator, Jubilee Celebrations