

GENERAL SESSION I

INTRODUCTORY LECTURES

Chairman : W. J. Trapp

*Continents*  
WELCOMING ADDRESS

by  
R. F. Lambert  
University of Minnesota  
Minneapolis, Minnesota

I welcome you on behalf of Wright Air Development Center and the University of Minnesota to the WADC - University of Minnesota Conference on Acoustical Fatigue.

After survey of work in the general areas of acoustical fatigue both in the U.S.A. and abroad, it appeared to us at Minnesota that people from at least three disciplines were actively engaged in the field, namely acoustics, applied mechanics, and failure analysis. It was also apparent that better communication was needed between those actively engaged in research, design, and service. There also was a need for better definitions of critical problem areas to help guide future work. We envisioned that a conference such as this would help to provide viewpoints and background material in such diverse areas as noise generation, response of mechanical structures to noise fields, the role and relative importance of damping mechanisms, and the correlation between determinate and random fatigue testing. Its broad objective was to provide a view of the over-all problem to those whom we feel are in the "ability-to-contribute" category. To take care of the "desire-to-know" group, the proceedings of the conference are to be published.

About a year ago a steering committee comprised of about ten individuals from universities, government laboratories, and commercial laboratories was formed to organize the conference. The committee explored various approaches to such a conference and came up with a proposed outline. This committee also prepared an invitation list of several hundred names of individuals who were both interested and active at various scientific centers. We tried our best to select people who would both contribute to and benefit from the conference.

It appears to me after reading technical papers written on the acoustical fatigue problem that there exists a very real Dr. Jekyll and Mr. Hyde or a sort of two-faced aspect to the problem. In other words, as in the case of most physical problems there are two aspects to the subject: the physical and the theoretical. Most of the papers introduced me to Dr. Jekyll quite adequately.

~~Manuscript~~ Released by editors for publication 6 March 1961 as a WADC Technical Report.

The physical aspects are represented by Mr. Hyde - a smooth character who isn't what he seems to be and can't be trusted. The mathematical aspects are represented by Dr. Jekyll - a dependable, extremely precise individual who always responds according to established custom. Mr. Hyde is continually hiding difficult concepts, parasitic elements, nonlinearities, or what have you under his jacket and pulling them out to spoil our fun at the wrong time. We can learn about Dr. Jekyll's orderly habits in a reasonable time, but Mr. Hyde will probably continue to fool and confound us till the end of time. In order to tackle the Mr. Hyde aspect at all, one must first become acquainted with Dr. Jekyll and his orderly ways. I believe this philosophy because I am principally an educator. On the other hand, as educators we should not be content to leave Mr. Hyde to the laboratory boys because we do want to know which aspects require further study and organized research efforts. We tried to inject both of these aspects into the program of the conference.

Thus, our objective in meeting here is to develop a better view of the over-all picture of acoustical fatigue and gain some firm ideas as to "where do we go from here".