

## SYMPOSIUM ON FATIGUE TESTS OF AIRCRAFT STRUCTURES: LOW-CYCLE, FULL-SCALE, AND HELICOPTERS

### INTRODUCTION

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Following a precedent set at previous West Coast National Meetings of the Society, ASTM Committee E-9 on Fatigue again sponsored a Symposium on Fatigue of Aircraft Structures at the West Coast Meeting held in Los Angeles, Calif., Oct. 1-5, 1962.

As indicated by the presiding officer of one of the sessions, fatigue research may concern itself with any of several levels of complication: (1) the basic mechanism may be studied from the physical and metallurgical points of view; (2) simple specimens may be tested to study the mechanical behavior of the material under carefully controlled loading conditions; (3) notches or other discontinuities may be used to introduce partially the effect of shape of practical parts; (4) subassemblies may be studied to introduce the effects of somewhat more complicated joints; (5) complete structures may be subjected to necessarily simplified representations of expected loading conditions; and (6) service failures may be analyzed. The symposium includes papers treating each of these phases of fatigue study and

introduces effects of high and low temperature.

As with other symposia on fatigue, this one does not conclude that the problem is now solved. It does, on the other hand, attempt to assemble representative current thinking on the problem with particular emphasis on aeronautical and missile applications. Several papers present procedures for correlating observations that should be particularly helpful to designers. One paper incorporating studies of the combined influence of loads and temperatures is almost certain to be the forerunner of a variety of such studies that will be carried out in connection with future vehicles.

The papers are organized into three broad categories: (1) low-cycle fatigue problems; (2) helicopter fatigue problems; and (3) problems encountered in design and evaluation of full-scale structures.

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