

light and the records be more precisely obtained using other types of high-speed photographic cameras. It should be pointed out that the methods used by the discussor are general and equally applicable to biaxial stress problems, to heterogeneous materials, and if the material is transparent, to three-dimensional problems.

References

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Authors' Closure

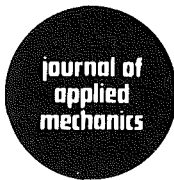
The authors wish to thank Dr. Durelli for his interest in this paper. His many contributions in the field of experimental mechanics are well known to all. It is not surprising that Professor Durelli would suggest using the grid method or moiré as an alternative approach to dynamic photoelasticity since he has had

wide experience with this method. It seems we all tend to pursue our own pet methodologies. The authors have had broad experience with high-speed photography and dynamic photoelasticity. We wanted to investigate the feasibility of using these techniques for dynamic plastic stress analysis.

Since the purpose of the reported research was to develop a technique for dynamic stress analysis of the material employing photoplasticity, the birefringence-strain calibration of the material could not be circumvented by employing grids. Furthermore, the methods suggested provide only the strain field. In order to obtain the stress field, one still must engage in extensive mechanical calibration to establish the stress-strain-strain rate relations.

With regard to Dr. Durelli's recommendation of a Cranz-Schardin camera, there was none available for use on this project. Besides, one of the authors has had recent experience with a camera of this type and he found that the resolution was no better. The limited number of frames would either have severely reduced the duration of the tests or increased the interval between frames to the extent that differentiation of the data to obtain the birefringence rate would have been impossible. In addition, he found that this type of camera was temperamental because of the effect of humidity on its operation and the speed was difficult to change. The Beckman, on the other hand, has 80 frames and has a continuously variable speed.

Grid or moiré methods may prove to be more effective as tools for dynamic plasticity problems. Their feasibility should certainly be investigated. An experimentalist of Professor Durelli's caliber, who is well acquainted with these methods, could make a valuable contribution by extending their application into this virgin territory.



book reviews

Analysis of Waves and Sound in Solid Bodies

Structure-Borne Sound. By L. Cremer and M. Heckl. Translated and revised by E. E. Ungar. Springer-Verlag, New York/Heidelberg/Berlin. 1973. \$36.10.

REVIEWED BY J. D. ACHENBACH¹

This work is concerned with the analysis of waves and vibrations in solid bodies, and with associated sound radiation at audio frequencies. Emphasis has been placed on the discussion of phenomenological aspects and practical applications. A typical chapter starts with a few pages of introductory and summarizing remarks, proceeds with a discussion of measurement techniques

and experimental data, and concludes with an exposition of theory and a discussion of applications. An exception is the second chapter, entitled, "Survey of Wave Types and Characteristics," which contains a slightly belabored presentation of classical theory.

The significant topics in the area of structure-borne sound have been covered thoroughly. Chapter 1 deals with measurement and generation of structure-borne sound; Chapter 2 presents the aforementioned discussion of wave types. Damping is thoroughly discussed in Chapter 3. The next chapter deals with impedances. An interesting discussion of attenuation by various mechanical means, i.e., blocking masses, etc., is contained in Chapter 5. The last chapter is concerned with sound radiation from structures.

This work presents a valuable collection of useful results. The book was originally published in German. Its translation and revision by E. E. Ungar have provided a welcome addition to the technical literature on this topic in the English language.

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