DISCUSSION

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The design charts introduced in this paper will greatly reduce the amount of time required for obtaining stresses and deflections in circular plates. These data are particularly valuable since they are presented in forms which can be readily adapted to conditions having varying degrees of loading and constraint. A problem which still confronts the designer is the determination of the amount of constraint that is present by the usual fabrication methods of welding, clamping, or bolting. Also, the designer, in many cases, must deviate from rigorous mathematical solutions to account for a change in plate thickness. Perhaps the authors can contribute simplifications to this phase of the overall problem also.

Authors' Closure

The authors wish to thank Mr. Erisman for his interesting comments. The problem of the precise evaluation of constraint associated with the indicated connecting methods is quite involved and normally not suitable for design calculations. However, since in most cases the supporting structure is in itself much more flexible than the local connecting device (bolt, weld, or clamp), it is not at all difficult to evaluate the effective constraint of the entire support, with adequate accuracy, by known structural techniques. In the event that this is not convenient, one can resort to experimental procedures which establish the effective rigidity of a supporting structure. In fact, one can establish a good combined experimental-analytical set of graphs that would provide coefficients for the support restraint to supplement the graphs of this paper.

The problem of a stepped plate is easily taken care of within the framework of the techniques presented in the paper. In that case one need only treat each stepped element as a separate plate subject to force-equilibrium and compatibility conditions at the stepped section. On the other hand, the case of the continuously varying plate has not been treated in this paper. This could be taken care of in one of the following ways. First, one could approximate it as a stepped plate with a suitable number of steps (in much the same way as variable diameter shafting is often analyzed), and then use the technique discussed above. Second, one could expand the curves presented in the paper to include general families of variable thickness plates. This second task has not been undertaken and would seem to serve a useful purpose in rounding out the presented work.

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