

DISCUSSION

D. E. Elliott¹ (written discussion)—Mr. Pouchot has made an interesting contribution to the theoretical approach to the erosion phenomenon. If water film interaction had occurred on the CEGB rigs, we would have expected erosion to occur earlier at the innermost parts of the specimen, since the surfaces towards the outside of the specimen would be screened by a thicker layer of water. However, we were unable to observe any difference in the incubation period between the parts of the specimen at different radii. Nevertheless, it is likely that water film retention effects become significant after erosion has started with fine droplets. The evidence for this is that whereas the erosion weight loss/water impacting curves for large droplets at different velocities form a series of parallel curves when plotted on log-log paper, those for fine droplets do not show this characteristic. Thus, we can argue that the fall off in erosion rate with time for small drops is not a purely geometric function, as it appears to be for large droplets, and that other effects such as water film retention could be playing a part.

There is also some evidence from the CAP erosion machine that their specimens do not erode uniformly; the innermost parts of the specimen eroding at what seems to be a much greater rate than one would expect after allowing for the nonuniform distribution of water across the surface of the specimens. It is significant to point out that this machine uses very fine droplets and moreover applies low centrifugal stresses to the specimens, thus if water interaction effects are to be seen they should show up first on this machine. It would be very interesting to carry out experiments to confirm Pouchot's hypothesis on the CAP machine in an attempt to see if water films could make a significant reduction in the erosion rates in operating turbines.

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