The effect of blade/wall relative motion was not covered in Refs 5–8, but was investigated by Gearhart[12] and Dean[10] and although their results have certain qualitative differences, possibly due to geometric variations, the convection effect due to the wall movement, though not as powerful as the effect of the presence of the gap alone, was seen to be important.

No cascade experiment, however, is able to investigate radial effects, centrifugal force on the blade boundary layer and the consequence of radial variations in the blade flow due to design considerations, so it remains to examine data from real turbomachines to evaluate these.

Conclusions

Part 1 of this review has covered about 30 years of research into tip gap phenomena in cascades. A good body of detailed, but uncoordinated work has resulted for diffusing type cascades, while that for accelerating type cascades is both sparse and lacking in the same detail. A good physical understanding of the flow in a tip gap region and the flow effect on conditions across the cascade channel have resulted, but the models proposed, as well as having a degree of mutual contradiction, all fail to deal adequately with the distribution of the tip vortex within the gap. In addition, while some workers have used ingenious methods to simulate rotor tip/wall relative motion, they have not been able to represent all the effects of rotation and may not have given a realistic representation of the casing boundary layer in rotor relative coordinates. Nevertheless, the detail with which it has been possible to make measurements in the comparatively easy conditions of a cascade has led to an understanding of the flow structure.

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Corrigendum

In the Technical Note by R. Peretz titled 'Relation between evaporator and condenser lengths of a finless heat pipe to achieve a maximum heat flow per unit weight' published in the September issue (Volume 3, No 3), Eq. (14) contained $\frac{1}{2}\lambda$ rather than $(1/2\lambda)$ in both numberator and denominator. Thus the equation should have read:

$$(L_c/L_c)^2 = \frac{h_{o,c}d_o)^{-1} + (1/2\lambda)\ln(d_o/d_i) + (h_{i,c}d_i)^{-1}}{h_{o,e}d_o)^{-1} + (1/2\lambda)\ln(d_o/d_i) + (h_{i,e}d_i)^{-1}} \quad (14)$$