DISCUSSION

J. W. Railly[2]

In a previous paper (Murugesan and Railly[3]) a cascade design method was described which commenced with an arbitrary profile and successively modified its shape by calculating the normal velocity arising as a result of the difference between the desired contour velocity and the current computed value. The method required the specification of the suction side velocity distribution as a function of the distance from the forward stagnation point and a similar specification of the pressure side. At each stage in the iteration the Martensen method was used to obtain the direct solution. After about 6 iterations the geometry to correspond with the required velocity distribution was known. Once having produced a design the influence of axial velocity change and of boundary layer displacement thickness was found by the use of the method described by Railly, Houlton, and Murugesan.[4] This method is an approximate direct method but the predictions of outlet and velocity angle due to the change in stream-element thickness and boundary layer growth are quite accurately calculated.

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[3] Murugesan, K., and Railly, J. W., "Pure design method for aerofoils in cascade," Journal of Mechanical Engineering Science, vol. II, no. 5, Oct. 1969, p. 454.

[4] Railly, J. W., Houlton, J. M., and Murugesan, K., "A Solution to the Direct Problem of Flow in an Arbitrary Mixed Flow Turbomachine," NEL Report No. 413, National Engineering Laboratory, Ministry of Technology, East Kilbride, Glasgow.