1047-30-497 **Edmund Y. M. Chiang***, Department of Mathematics, Hong Kong University Science and Technology, Clear Water Bay, Sai Kung, Hong Kong, and **R. G. Halburd** and **E. F. Lingham**. *Maimquist-type theorems for Painleve equations.*

Abstract: At the beginning of the twentieth century, Painlevé and Gambier analyzed the possible forms of f when the equation $y''(z) = f(z, y(z), y'(z))$, with $f(z, \zeta, \xi)$ rational in ζ and ξ and with z dependent coefficients, has *all* of its solutions to be single-valued around their movable singularities. They found fifty possible classes for f so that the equations possess the required property. Forty four of the f are known to be solvable in terms of known functions, and the remaining six give raise to what is known to be the six Painlevé equations. On the other hand, Malmquist showed in 1931 that if the equation $y'(z) = R(z, y(z))$, where R is rational in y and with polynomial coefficients, admits a meromorphic solution, then the equation must be reduced to a Riccati equation. We extend Malmquist's result that when f in $y''(z) = f(z, y, y')$ is suitably restricted, then we c! an recover some of the six Painlevé equations by *only assuming* the equation to admit a meromorphic solution. The method of approach is based on a combination of Painlevé analysis and Nevanlinna's theory of value distribution of meromorphic functions. (Received February 04, 2009)

1