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Using Maxwell's Equations in the late 1800s

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Between the publication of Maxwell's *Treatise on Electricity and Magnetism* in 1873 and the early 1900s his field equations were not considered to be fundamental by many Cambridge-trained physicists Instead, they were thought to derive from Hamilton's principle given an appropriate energy expression. Such an expression usually assigned a velocity or a position function to field quantities, though this was not invariably done. Precisely because the Hamiltonian, and not the derivative field equations, was taken to be basic, new effects could be generated by adding terms to the energy expression. This was how the Faraday and Kerr magneto-optic effects were handled. The program however never did generate a method for incorporating dissipative phenomena, as Oliver Heaviside (who disliked the use of Hamilton's principle) demonstrated. The procedure was in the end decisively abandoned when J. G. Leathem, a student of Joseph Larmor a Cambridge, demonstrated that it could not handle a particularly subtle magneto-optic process.