let t represent any operator of order p which transforms the generator s of a cyclic group of order p^{α_1+1} into its $p^{\alpha_1}+1$ power. The commutator quotient group of the group generated by s and t is clearly of type $(\alpha_1, 1)$. Let t' represent any operator of order p^{α_2} which is independent of s and t. The operators s and tt' will then generate the required non-abelian group. By forming the direct product of this non-abelian group and some abelian group any additional invariants may be introduced into the commutator quotient group. Hence the theorem is proved.

STANFORD UNIVERSITY,
December, 1904.

NOTE ON ISOTHERMAL CURVES AND ONE-PARAMETER GROUPS OF CONFORMAL TRANSFORMATIONS IN THE PLANE.

BY PROFESSOR C. L. BOUTON.

IN the January number of the BULLETIN, page 180, Mr. J. E. Wright integrated a certain differential equation by determining a continuous group which the equation admits. In solving the problem Mr. Wright determines a group of *conformal* transformations with *given* path curves. In this connection, it is an obvious problem to find the necessary and sufficient conditions under which a conformal group with given path curves shall exist. The solution of this problem is given in the following theorem:

THEOREM. — *A one-parameter group of conformal transformations with given path curves exists when and only when the given curves form an isothermal family.*

Although this theorem seems very obvious the writer cannot find it in print, and, therefore, gives two easy proofs for it.

I. Let $Uf = \xi p + \eta q$ be the symbol of the infinitesimal transformation of the group. Since the group is to be conformal, we must have $\xi + i\eta = \phi(x + iy)$. The differential equation of the path curves is $\eta dx - \xi dy = 0$. From this equation we have

$$\frac{dx + idy}{\xi + i\eta} = \frac{dx - idy}{\xi - i\eta},$$