exp (nW), n any integer. Then N is a discrete subgroup of the central of G, and so (see [1], p. 12) G/N is a Lie group locally topologically isomorphic with G.

But the homomorphism $G \to G/N$ carries S_3 into S_3/N, which is simply isomorphic with $G_3/N = G_3^*$. This and the corollary to Theorem 1 complete the proof.

E. Cartan [5] has shown that the universal covering group of the group of projective transformations of the line is topologically isomorphic in the large with no linear group.

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CHARACTERISTICS OF BIRATIONAL TRANSFORMS IN S_r

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1. *Introduction.* Consider a k-dimensional variety, V_k^n, of order n in an r-space, S_r. Let us project V_k^n from a general $(r-k-t-1)$-space of S_r upon a general $(k+t)$-space of S_r and denote the projection by ${}_tV_k^n$. We are supposing that $1 \leqq t \leqq k$. Then upon ${}_tV_k^n$ lies a double variety, D_{k-t}, of dimension $k-t$ and order b_t and upon D_{k-t} lies a pinch variety, W_{k-t-1}, of dimension $k-t-1$ and order j_{t+1}. Since the symbol W_{-1} is without meaning, we thus obtain $2k-1$ characteristics $b_1, b_2, \cdots, b_k, j_2, j_3, \cdots, j_k$. The symbol j_1 has a meaning which will be explained subsequently.

Now let a general $(r-k+q-2)$-space, $S_{r-k+q-2}$, $(1 \leqq q \leqq k)$, be given in S_r. Through this $S_{r-k+q-2}$ pass ∞^{k-q+1} primes of S_r and ∞^{k-q} of these are tangent to V_k^n. The points of contact form a $(k-q)$-dimensional variety, U_{k-q}. Denote its order by m_q. Thus