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The inverse Galois problem is still one of the greatest open problems in group theory. It asks, given a group G and a field F , can we always find a Galois extension of F having Galois group G ? Kummer theory answers this question for fields F containing primitive p th-roots of unity and groups G that are direct sums of $\mathbb{Z}/p\mathbb{Z}$'s. In such cases, adjoining p th-roots of elements to F yields finite Galois extensions with abelian Galois groups of exponent p , and conversely every such Galois extension is of this form. Furthermore, if we are given that F is a finite Galois extension over some field B , and L is a Kummer extension of F , it is straightforward to determine whether L is also Galois over B . In that case, it is possible to characterize the Galois group of L over B by computations within F . The goal of my research is to extend this result to Artin Schreier theory, the positive characteristic analogue to Kummer theory. (Received September 22, 2009)