question. Second we consider special cases in which our answer assumes forms which give concrete solutions to the lifting problem.

Given the action of G on X, there is associated with this action a universal fibre bundle, $X \xrightarrow{i} X_G \xrightarrow{p} B_G$, of fibre bundles with fibre X and structural group G. Here B_G is the classifying space for G and $X_G = E_G \times_G X$, the twisted product of the contractible G-space E_G with X. The answer to the lifting up to homotopy problem is embodied in the following theorem.

Theorem 1. <u>The fibration</u> $E \xrightarrow{p} X$ <u>is fibre homotopy equivalent to a G-fibration if and only if it is fibre homotopy equivalent to the pullback of a fibration over</u> X_G <u>induced by the inclusion</u> $X \xrightarrow{i} X_G$.

Now theorem 1 gives rise to a version of itself for the lifting problem in the case of covering spaces.

Theorem 5. G <u>lifts to a covering</u> $\tilde{X} \xrightarrow{p} X$ <u>if and only if the covering is a pullback of a covering of</u> X_G <u>by</u> $i: X \to X_G$.

A similar theorem to theorem 1 figures in the <u>principal bundle lifting problem</u>. That problem is closely related to the lifting problem and it goes as follows:
Let $K \to E \xrightarrow{p} X$ be a principal K-bundle with a G-action on X; can we impose an action on E such that p is equivariant and such that the action of G on E commutes with the