5. *Compact Topological Groups.* The following theorem is loosely related to Theorem 1.

THEOREM 3. *Let G be any compact topological group whose manifold is homeomorphic with a subset of Cartesian n-space. Then any series of closed subgroups of G can be well-ordered in the direction of increasing subgroups.*

For the different group nuclei* are at most $(n+1)$ in number. And the index of the subgroup generated by any one of these nuclei in any larger closed subgroup having the same nucleus is finite.

But if we restrict ourselves to *closed* T-invariant subgroups, then the proof of Theorem 1 breaks down. For consider the additive group of residues modulo unity. The subgroups generated by 1/2, 1/4, 1/8, $\cdots$ form one chief series, and those generated by 1/3, 1/9, 1/27, $\cdots$ a second one, and yet the two have not a single factor-group in common.

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LOCI OF m-SPACES JOINING CORRESPONDING POINTS OF $m+1$ PROJECTIVELY RELATED n-SPACES IN r-SPACE†

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Let $m+1$ n-spaces $S_n^{(1)}, S_n^{(2)}, \cdots, S_n^{(m+1)}$ be given in general positions in an r-space S_r. It is convenient, but not necessary, to let $r=mn+m+n$. We shall assume that the given n-spaces are in an S_{mn+m+n}. Now suppose that these n-spaces are all projectively related, that is, to a given subspace in any one of them corresponds a definite subspace of the same number of dimensions in each of the others. These corresponding subspaces are themselves projectively related.

Now consider a group of corresponding points, one in each of the $m+1$ given n-spaces. These points determine an m-space.

* A *group nucleus* is a neighborhood of the identity; two group nuclei are considered the same if sufficiently small common neighborhoods of the origin are isomorphic.

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