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David E. Dobbs* (dobbs@math.utk.edu), Department of Mathematics, University of Tennessee, Knoxville, TN 37996-1320. *On the commutative rings with at most two proper subrings.* Preliminary report.

The (commutative unital) rings R with at most two proper (unital) subrings are characterized. In the case of characteristic 0, such rings R are classified up to isomorphism. In the case of positive characteristic, the problem of classifying such rings R up to isomorphism is reduced to the problems, for a prime number p and an integer $n \geq 2$, of classifying up to isomorphism (1) the rings A such that $\mathbb{Z}/p^n\mathbb{Z} \subset A$ is a ramified extension and (2) the rings B such that $\mathbb{Z}/p^n\mathbb{Z} \subset A \subset B$ is a tower of ramified extensions with B having a generator satisfying certain specific relations. For (1) (resp., (2)), this question of classification up to isomorphism is answered in case p is arbitrary and $n = 2$ (resp., in case $p^n = 4$), while for arbitrary p and n , nontrivial bounds are given for the relevant number of isomorphism classes. (Received December 24, 2016)