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We define monotone properties using stars of coverings. This relates to work of V. Tkachik, R. Wilson, J. van Mill, O. Alas, L. Junqueira, M. Matveev and others who generalized the D-space property of E. van Douwen and E. Michael. Given a property P , we call a topological space X monotonically star- P if one can assign to each open cover \mathcal{U} a subspace $s(\mathcal{U})$ of X with property P in such a way that $\text{Star}(s(\mathcal{U}), \mathcal{U}) = X$ and if \mathcal{V} refines \mathcal{U} then $s(\mathcal{U}) \subset s(\mathcal{V})$. Countably compact separable spaces are monotonically star-finite. Each ω -bounded, monotonically star-finite space is compact. There is a sequentially compact, monotonically star-finite space that is not compact. There is a countably compact space that is not monotonically star-compact. If X is a regular T_1 space with a weak P -point p then $X \setminus \{p\}$ and X are not monotonically star-finite. Proto-metrizable spaces are monotonically star-closed-and-discrete, but stationary sets of regular uncountable cardinals are not monotonically star-closed-and-discrete. Monotonically star-closed-and-discrete GO-spaces are paracompact. Monotonically star-finite GO-spaces are compact and first countable. (Received August 02, 2011)