Abstract. A metric space $M = (M; d)$ is **homogeneous** if for every isometry $f$ of a finite subspace of $M$ to a subspace of $M$ there exists an isometry of $M$ onto $M$ extending $f$. The space $M$ is **universal** if it isometrically embeds every finite metric space $F$ with $\text{dist}(F) \subseteq \text{dist}(M)$. (With $\text{dist}(M)$ being the set of distances between points in $M$.)

A metric space $U$ is an **Urysohn** metric space if it is homogeneous, universal, separable and complete. (It is not difficult to deduce that an Urysohn metric space $U$ isometrically embeds every separable metric space $M$ with $\text{dist}(M) \subseteq \text{dist}(U)$.)

The main results are: (1) A characterization of the sets $\text{dist}(U)$ for Urysohn metric spaces $U$. (2) If $R$ is the distance set of an Urysohn metric space and $M$ and $N$ are two metric spaces, of any cardinality with distances in $R$, then they amalgamate disjointly to a metric space with distances in $R$. (3) The completion of every homogeneous, universal, separable metric space $M$ is homogeneous.