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Francis J Pastijn* (francis.pastijn@marquette.edu), Mathematical and Statistical Sciences,
Marquette University, Milwaukee, WI 53201-1881. *Bands and symmetry*.

The class of semigroups that can be embedded into a semigroup which has a transitive automorphism group forms a quasivariety of semigroups. Every semigroup in this quasivariety is either a band or is idempotent free. It can be shown that every band B can be embedded into a band B' which has a transitive automorphism group and such that B' is in turn embedded into a power of B : thus B and B' generate the same prevariety (and therefore also the same quasivariety, the same variety). If a subgroup of the automorphism group of a band B has the D -classes of B as its orbits, then B is a regular band. One shows that conversely, every regular band can be embedded into a regular band B such that $\text{Aut } B$ has a subgroup G where (i) the D -classes of B are the orbits of G , (ii) every element of B belongs to a semilattice transversal of B , and (iii) G acts as a transitive permutation group on the set of semilattice transversals. (Received September 16, 2019)