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RHODIUM PLATING IN LIGHTHOUSE BEACONS

An unusual example of the corrosion resistance and reflectivity of electroplated rhodium is found in the AGA Sunvalve manufactured by the lighthouse engineers, Gas Accumulator Co., (U.K.) Limited. This ingenious device controls the operation of lighthouse beacons.

The valve consists of three copper rods, rhodium plated to give a highly reflective surface, and a fourth copper rod with a mat black surface. At dawn, sunlight falling on the mat black surface warms the copper rod and it expands, while at dusk, when the light intensity falls, the rod cools and contracts. The movement in the rod caused by longitudinal expansion works a valve cut-off mechanism, interrupting the flow of acetylene gas to the beacon and extinguishing the light during daylight hours.

The high reflectivity of the rhodium plated rods ensures that their expansion is independent of the light intensity and they serve to compensate for expansion or contraction in the mat black rod due to changes in ambient temperature. In service, Sunvalves are exposed to the corrosive attack of marine atmospheres in all climates yet the rhodium plate retains its reflectivity for very long periods. The average service life of the valve is fifteen years but some have been in operation for over thirty.

