When 2-(2-methyl-1-piperidinyl)ethanol derivatives 3a and 3b were dehydrogenated with Hg(II)-EDTA, an iminium function involving the tertiary $\alpha$-carbon atom of the piperidine ring is formed regioselectively. Cyclization of these intermediates yielded diastereomeric mixtures of oxazolidines 7a and 7b, in solutions of which hydroxy-enamine species 8a/9a and 8b/9b, respectively, could be detected by NMR spectroscopy. A hydroxy-enamine derived from 7a could be trapped by cycloaddition to tetrazine 10. Protonation of the oxazolidines generated the iminium salts 6a/6b-X with loss of a chirality center. For prevention of different directions of ring dehydrogenation in the 2-(3-methyl-1-piperidinyl)ethanol compounds, the 6-position was blocked with two methyl groups. With amino alcohol 17, the isolation of one of the racemates in pure form was achieved, which by dehydrogenation produced a diastereoisomeric lactam mixture 18, as shown by NMR spectroscopy. Reaction of 2-(4-methyl-1-piperidinyl)ethanol 19 with Hg(II)-EDTA gave rise to a diastereomeric lactam mixture 21 in the ratio 60:40. From enantiomerically pure phenyloxiranes, the amino alcohols $R(-)-19$ and $S(+)-19$ became available. Their dehydrogenation under standardized conditions always showed a spreading range of isomeric lactams, which could not be separated.