Dennis Lin's problem

Dennis Lin is interested in skew-symmetric matrices C with diagonal entries 0 (as they must be) and off-diagonal entries ± 1, and also in matrices of the form $H = C + I$ with C as described. He is interested in the largest possible determinant of such matrices of given size. Of course, it is natural to use the letters C and H for such matrices, but they are not necessarily conference or Hadamard matrices. So I will call them *cold matrices* and *hot matrices* respectively.