1014-15-575 **Warren P. Johnson*** (warren.johnson@conncoll.edu), Connecticut College, Box 5414, 270 Mohegan Avenue, New London, CT 06320. *A q-Hilbert matrix.*

A Hilbert matrix is square with ij entry equal to $1/(i+j-1)$. In a generalized Hilbert matrix the ij entry is $1/(a+i+j-1)$ for a parameter a that doesn't make any of the denominators zero, but is otherwise arbitrary. It is well known that the determinant and the inverse of a Hilbert matrix can be found from Cauchy's double alternant, the determinant whose ij entry is $1/(x_i - y_j)$. Then define $[n] = (1 - q^n)/(1 - q)$ for an arbitrary complex number q, where this means n if $q = 1$; $[n]$ is said to be the q-analogue of the number n. We consider a family of q-analogues of the generalized Hilbert matrix. Cauchy's double alternant may be used to find the determinant and the inverse of one member of the family, and then all the other members follow. We also find the LDU factorizations of these matrices, and the inverses of L and U. (Received September 20, 2005)