a hexagon such that the opposite sides meet in three collinear points, then the vertices of H are on a conic.

Proof. Set $P_{ij} = L_i \cap L_j$ and let L be the line through P_{14}, P_{25} and P_{36}. Then if Q is a conic passing through the five vertices $P_{12}, P_{23}, P_{34}, P_{45}, P_{56}$ of H, we may take $C = L_1 + L_3 + L_5$, $D = L_2 + L_4 + L_6$, and $E = Q + L$ to conclude that Q passes through P_{61}. Q.E.D.

「 L is the line passing through the three collinear points. According to Corollary 4.2, P397, Algebraic Geometry by Hartshorne, $\exists$ a conic passing $P_{12}, P_{23}, P_{34}, P_{45}, P_{56}$. By the classical statement above, $E = Q + L$ must pass through P_{61}. Since L can not pass through P_{61} ($\because$ If so, L contains L_6), Q must pass through P_{61}. $\Rightarrow$ All $P_{12}, \cdots P_{61}$ of H are on Q. "More on.
$L = L_6 \ni P_{14}, P_{25}, P_{36}, P_{26}$. $\Rightarrow$ $L = L_2$" contradiction since $L = L_2 = L_6$. 」

Along similar lines but at a deeper level we shall prove a converse to the Cayley-Bacharach theorem. Suppose that

$$\Gamma = P_1 + \cdots + P_{n^2}$$

is a zero-cycle consisting of n^2 distinct points. We say that Γ satisfies the Cayley-Bacharach property if every curve E of degree $2n-3$ that passes through all but one point of Γ necessarily contains