$$E[(\frac{\partial}{\partial p}\log[f(\mathbf{M}\,|\,p)])^2] = E[(\frac{(M-Np)}{(p-p^2)})^2]$$

$$= E[(M^2 - 2MNp + N^2p^2)/(p-p^2)^2]$$

$$= \frac{E[M^2] - N^2p^2}{p^2(1-p)^2} = \frac{N}{p(1-p)}$$