1048-17-327 **Fred W. Helenius*** (fheleni@emory.edu). *Freudenthal Triple Systems by Root System Methods.*

A *Freudenthal triple system* (FTS) is a vector space endowed with a quartic form and a bilinear form such that a triple product defined from these forms satisfies a specific identity. The original example is the 56-dimensional representation of E_7; here, the group stabilizing both forms is precisely E_7. M. Rost observed that an 8-dimensional vector space with quartic form occurring in a paper of M. Bhargava was, with a suitable bilinear form, a FTS; he asked what the stabilizer of the forms was in this case. We answer his question by showing that both his example and the 56-dimensional representation of E_7 are instances of a general construction that reveals a FTS within any Lie algebra of type B, D, E or F, with natural definitions for the quartic and bilinear forms. (Received February 10, 2009)