962-51-1432 **Kevin Lee Anderson*** (`kevina@math.ksu.edu`), Kansas State University, Mathematics Department, 138 Cardwell Hall, Manhattan, KS 66506. *Coxeter-Petrie Complexes.* Preliminary report.

The Coxeter-Petrie complex is a thin, rank 4 complex containing as rank three residues the various dual forms of maps (in the sense of G.A. Jones and J.S. Thornton) as rank three residues. Indeed, Jones and Thornton show that the outer automorphism group of the extended triangle group $\Delta = \langle s_1, s_2, s_3 \mid s_1^2 = s_2^2 = s_3^2 = (s_1 s_3)^2 \rangle$ is precisely S_3, the symmetric group of degree three, transitively permuting the commuting involutions s_1, s_3 and $s_1 s_3$. By adding a "central node," corresponding to the involution s_2, one obtains a marked Coxeter diagram of shape D_4, with each bond marked ∞. In turn, if $\mathcal{M}$ is a map with monodromy group $G = \langle a, b, c \rangle$, then G is a homomorphic image of Δ. The Coxeter-Petrie groups are obtained by adding those relations necessary for the rank three subgroups corresponding to the connected subdiagrams to be isomorphic to the monodromy groups of the dual forms of $\mathcal{M}$. In the same fashion, one obtains a thin rank four complex as a diagram geometry (in the sense of F. Buekenhout) having a marked diagram of type D_4. The finiteness of the Coxeter-Petrie groups is of interest, and appears to be quite rare. However, the Coxeter-Petrie groups of the Platonic maps are finite. For example, the Coxeter-Petrie group of the tetrahedron can be realized as a Coxeter group having the same defining relations as the extended Weyl group $\widetilde{C_3}$ with two additional relations. The resulting group has order 96 and is isomorphic to the semi-direct product of the original monodromy group ($\cong S_4$) over the Klein four group. (Received October 06, 2000)