find that radiative losses always dominate, with mass motion terms of next importance. Conductive losses out of the loop at \( \sim 30,000 \) K appear relatively unimportant during the decay phase. We estimate the energy dissipation in the flare loop required to balance the energy equation. This work was supported by NASA under DPR 5-60404-

24.11.03 The Restless Solar Corona: Type I Radio Bursts and the Magnetic Evolution of Coronal Loops. D. O. Wentzel, B.A.A.S. 11, 441, 1979 and I.A.U. Symp. 86, Radiophysics of the Sun) invoked plasma waves that also imply magnetic reconnection. Three consequences are discussed in this paper. 1) The model predicts the magnetic flux, annihilated per radio burst to be roughly 1014.5 Maxwells. Summed over all the bursts, the annihilation rate matches the changes in magnetic flux typical of evolving coronal loops. 2) The burst rate, of order 1 sec^{-1}, implies frequent, small and localized magnetic reconnections. Such a continual state of disequilibrium is in agreement with other recent observational and theoretical expectations. The corona in active regions must be restless even when it does not flare. 3) Magnetic reconnections may cause direct conversion of magnetic into kinetic energy, as is the case for the gas ejected in "peteshek's model". These motions are partially converted into heat upon striking the surrounding material. If the heat from these motions following reconnections at type I sites is sufficient to heat coronal loops, then these motions should be observable by already planned satellite instruments. One may expect motions of a few 100 km sec^{-1} lasting for a few seconds with emission measures of order 10^{43} cm^{-3}. This work is supported by the NSF Atmospheric Research Section.

Session 25: 1440-1630 (Redwood Room)

Special Meeting: Historical Astronomy

25.04.12 Riddles of Ohio's Earthen Mounds. J.A. Eddy

HAG/NCAR — The largest relics left by early inhabitants of North America are the earthen mounds, found on Miss-

issippi Valley lowlands from the Gulf of Mexico to the Great Lakes. Some resemble the pyramids of Mexico, from where, some say, ancestors of Adena, Hopewell, or Mississippian moundbuilders may have come. Many of the mounds contain burials, leading to a common conception of the moundbuilders as a race of morticians, kept busy by interring one another. Distinctly different are a class of large geometrical mounds found in Ohio and attributed to the Hopewell culture (200 B.C. to A.D. 600): connected patterns of earthen dikes that enclose carefully-constructed circles, squares, and octagons that encompass 20 to 50 acres. The largest and best preserved, a circle-octagon structure at Newark, is axis aligned to the northermost point of rise of the moon. Other mounds of the same type are not so aligned, however, leaving their original purpose something of a mystery. We propose that they may have served as playing fields. If so, they may be a link between the largely unknown game played on Mesoamerican ball courts and Amerindian lacrosse.

25.06.12 The Long-term Accuracy of the Maya Venus Calendar in the Dresden Codex. J. R. Carlson, Center for Archaeoastronomy, U. Maryland — Six pages of the 12th century Maya Dresden Codex contain a ritual Venus calendar of 584 days. This period is in turn divided up into four canonical periods of 236, 90, 250, and 8 days corresponding to Venus visibility as a morning star, disappearance at superior conjunction, reappearance as an evening star, and disappearance at inferior conjunction, respectively. Five pages of the text (pp. 46-50) represent five "Venus cycles" of 584 days each. This period is set equal to eight calendar years of 365 days. This sequence (5x584 = 8x365 = 2920 days) is then repeated thirteen times to form a grand 104-year cycle of 37,960 days which incorporates a further commensuration with the "Sacred Almanac" of 260 days (65x584 = 104x365 = 146x260). Since the synodic period of Venus is about 583.92 days, this long period was in error by approximately 5.2 days. Page 24 of the Dresden Codex provides a correction table to shift the calculation base of the calendar to maintain agreement with astronomical reality. The nature, purpose, and accuracy of the Dresden Venus calendar as a long-term ephemeris are examined in light of current research. This work is supported in part by a Tinker Foundation Research Fellowship.

25.09.12 W. H. Pickering's Scale of Seeing. A. A. Hoag, Lowell Observatory. — In 1891, while working at Arequipa, Peru, W. H. Pickering devised a scale of